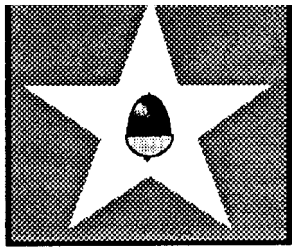
Conflict Studies Research Centre

Professor A Kennaway

Collected Writings

1990-2000



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Foreword

In the six months since Professor Kennaway's death, many of his colleagues have missed his pungent comments and analysis of events. More, we have found ourselves turning to his published papers as a means of explaining to others the starting point of much of our own analysis. It therefore seemed sensible to collect in one volume those pieces which continue to have relevance and interest. That there are so many, and that they continue to have a great deal of contemporary relevance in the face of the fast pace of change of the last ten years, should come as no surprise to those who knew him.

In his ten years at CSRC, Sasha wrote over 30 published papers for the Centre. He also maintained a prolific correspondence with the British, American and Russian press as well as individuals worldwide. Inevitably, selection has been difficult, and no attempt has been made to revise the papers by changing tenses or updating figures. The collection starts with his view of what makes Russianness. There follows a series of historical pieces, which reveal in detail how today's Russia was formed by the character of its industrial, economic and administrative forbears. Then come his useful studies of the problems of industrial restructuring. As he was ever pragmatic, these include many practical suggestions and case studies from his own experience, and pull no punches about what he thought was wrong with many of the miracle cures touted by foreigners.

To one of his papers (not in this collection), Sasha prefixed the disclaimer: the author does not necessarily agree with the views he reports in this paper. Yet he always attempted to explain to his reader the problems as they were seen by those involved, in their own terms and by their own standards as well as by ours, and adjusted his own views where he learned something new.

These papers present Sasha's unique perspective, and are enlivened by anecdotes of himself and his wide acquaintance, together with gleanings from his omnivorous reading. They also show fascinating glimpses of his many previous 'careers', before he took up his work for CSRC in 'retirement'. For those who did not know him, there is much to learn from them; for those who did, some happy memories and some salutary reminders.

Anne Aldis

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Directorate General Development and Doctrine
Royal Military Academy Sandhurst
Camberley
Surrey
GU15 4PQ
England

Telephone : (44) 1276 412346
Or 412375
Fax : (44) 1276 686880
E-mail: csrc@gtnet.gov.uk
http://www.csrc.ac.uk

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The Mental & Psychological Inheritance Of Contemporary Russia

> *"No wise Intelligence Officer should ask himself 'what would I do if I were in someone else's shoes? The essential issue is to understand what are the driving forces that impel him to act, think and react the way he does'."*[1]

It would be entirely wrong to discuss Homo Soveticus and the recent Communist past as the driving force in such a context since the Communist Party (CP) came to power in Russia at the, largely self inflicted, demise of the Tsarist Empire society whose basic system, weaknesses, faults and instincts were largely carried forward by the Party. It would be as well, therefore, to examine the deep rooted driving forces that go to the formation of Russia, Russians and Russianness before we look at the effect of the Communist regime itself.

The assumptions of this paper are firstly that every country, whilst exhibiting some common features, at the same time has some features which are the result of its history and which provide key differences in culture. An understanding of that culture is essential in dealings with people who have inherited it.

Secondly that no element of the make up of the present leaders and opinion formers, executives and the mass of the peoples of Russia is unique to Russia; these traits can be found, to a lesser degree perhaps, in almost every other country in western Europe, the USA and Japan. This suggests that the basis upon which we might consider ourselves to be superior and therefore to be able to teach the Russians, is severely constrained. Such advances as we have gained have taken decades and indeed centuries to evolve. Even if the Russians were 100% convinced that they had to adopt our ways there is no reason why they should be able to do so more quickly than we have.

So, while we consider the specific Russian attributes, let us bear in mind the second assumption and avoid any temptation to assume a superiority of our culture against theirs. I suggest furthermore that people, especially with such a history as theirs, are somewhat touchy if they think they are being treated as inferiors, especially when they and their country are plainly going through a bad period.

The Essential Elements Of Eternal Russia

Let us consider each of the most important in turn:

Patrimonialism

This term, quoted by my colleague, Dr Mark Smith[2] to whom I am indebted, has been used to describe the Russian state under tsarism. "The Ruler and his administrative machine feel that the country belongs to them and that they may use its resources as they wish. The whole of Russia is but a giant Royal estate." The

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[1] I am indebted to my colleague Lt-Col (Retd), Dr A Clayton, Intelligence Corps, for drawing my attention to this remark by Brig Williams, who was Gen Montgomery's chief Intelligence office.

[2] "Russia's State Tradition", CSRC, May 1995.

American historian Richard Pipes wrote 'under a patrimonial system there can be no clear distinction between state and society in so far as such a distinction postulates the right of persons **other than the sovereign** to exercise control over things and (where there is slavery) persons. In a patrimonial society there exist no formal limitations on political authority, nor rule of law, nor individual liberties.[3] In fact this condition began to develop amongst the Grand Dukes of central Russia in the 14th century. For various reasons the landed gentry did not grow in power as they did in Southern Russia and in Western Europe.The rulers of the central area grew in power till they became the masters of all Russia. Although there were some struggles between the Ruler and his "barons" who in Russia were knows as Boyars, progressively from Ivan I (1328-41) onward the ruler successfully became an autocrat. Ivan III had himself recognised as Tsar, in recognition of the magnificence of his victories over other dukes and in throwing off the Tatar yoke in 1480.

I continue to quote from Mark Smith & from Pipes:

"Patrimonialism at its height rested on four pillars:
Monopoly on political power
Monopoly on economic resources and on wholesale trade
The ruler's claim to unlimited services from his subjects; absence of individual as well as group (estate) rights
Monopoly on public information."

As my colleague, Dr Clayton, points out, these attributes are described by Hegel, a German 19th century philosopher with a cold blooded taste for autocracy who described in some detail his concept of an all-powerful State.[4] Hegel held that "the State is the Divine idea as it exists on earth and that the individual achieves self-realisation only as a member of it." Marxism derives to a significant degree from Hegel. This provenance explains, for example, the negative attitude of the Soviet Communists under Lenin to the disabled, who by definition were not fully fledged members of communist society because they could not perform the honourable tasks of physical work.

Fundamental Laws of Russian Empire defined the Tsar as 'unlimited' and 'autocratic'. This meant that he was subject to neither constitutional nor institutional constraints. He was the exclusive source of laws.

Tsar Nicholas the Second, completing his return in the first national census in 1897, gave his rank as "first nobleman of Russia and his occupation as "Master of the Russian land", while his German wife described herself as "Mistress of the Russian land." His reactionary concepts led Russia to defeat in 1914-17, to social ruin and to the victory of the CP. It was he who ruled by the slogan "Faith, Loyalty and Autocracy". His "Ministers" were powerless, they had to wait upon his pleasure, as did the Duma. It is true that he, like Alexander II, felt impelled to give a little to sharing power with the aristocracy and the educated classes. However these occasional relaxations in autocratic power were followed by further repressions as the fear of democracy getting out of hand was reinforced by events.

The General Secretaries of the CP, Lenin and Stalin, were also all-powerful; their associates lived in fear and had little influence on the policies. Their successors

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[3] "Russia Under The Old Regime", Penguin, 1974.

[4] Hegel's contribution to Communist dogman is well described in "Theory and Practice of Communism", R N Carew Hunt, 1957, Geoffrey Bles Ltd, London.

retained much of that power, although it was to a greater degree shared by the Central Committee. Yel'tsin, an old CP Boss, tries to follow the line in his relations with his "Government." It is the only way he knows. His own "Cabinet" promulgates decrees. The decision to go to war in Chechnya [1994] was almost certainly taken within his Security Council without time being given to the Ministry of Defence to lay the proper planning, training and logistic support for the armed forces. It gave every impression of a sudden 'whim', a caprice to use the Russian term. At the same time his Ministers treat their ministries as a personal fiefdom which provides them with opportunities to enrich themselves and friends. There is no coherent Cabinet Governmental policy; ministers fight each other for their own "line" and privileges. However Yel'tsin has to take some notice of the Duma; but plays one faction against another. His statements to them are often in conflict with each other and with those made for western consumption.

The political history of the western world from the 15th to the dawn of the 21st century has seen a generally increased enlargement of democracy, perhaps punctuated by some reversals from time to time in some countries. In Russia, by contrast, the rule of autocracy over the same period has been at best constant, and for long periods became more rigid with time, although some modest and short lived relaxations have been visible. This is the unfortunate inheritance of the rulers and peoples of every part of the former Soviet Union. It would be a miracle if they were to move steadily toward a democratic society.

They have no experience of accountable and delegated responsibility; political parties with coherent programmes - with the exception of the Communist parties; the rule of law to which the State itself is also subject. Their experience is that of arbitrary law without justice; Russia has never been a society that lived under the rule of law. "Law existed not to enforce justice but to maintain order." Count Benckendorff, the Chief of the Secret Police under Nicholas I (1825-55) argued that "laws are written for subordinates, not for the authorities."[5]

> *"Progress cannot be made whilst Government policies are inimical to sensible investment; we are waiting for a Good Tsar".*[6]

Russians have always waited for gifts from a Boss, any Boss - God, the Tsar, the CP General Secretary or the President. It does not occur to them to act for themselves. Faith in a Good Tsar flies in the face of normal experience. However Russians always had faith that the "Little Father" - Batushka - would give them justice if only they could get past the functionaries to him. From them nothing could be expected. The local bosses could do what they liked. They were not accountable. "**God is too high and the Tsar is far away" as the Russian proverb goes**. See the story in "The House on the Dvina"[7] about the young man Alexander who had an altercation, when tipsy, with a sentry in Archangel; in the struggle the soldier's gun went off and he was killed. It was an accident but Alexander in being party to killing a soldier was found guilty of high treason and sentenced to Siberia. His pregnant wife travelled in the depths of winter by sleigh to St Petersburg to see the Tsar, who exercised clemency during certain holy days at Christmas and Epiphany to petitioners who came in person. Alexander II, just before his assassination in 1881,

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5 Compare: "Was its der Freiesten Freiheit?", spoken by the Duke of Alva, the Spanish Governor of the Netherlands to Egmont in Goethe's play "Egmont".

6 Remark made by the Deputy Minister of Social Services of the Russian Federation, Boris Stepanov, to me, 19 October 1995.

7 "A Russian Childhood", Eugenie Fraser, Corgi Books, 1984.

promised that her husband would be freed. He was. Even people going to their deaths decreed by Stalin considered that if he knew the injustice he would right it. But he never did. Even Molotov, the Foreign Affairs Minister, did not dare to intercede with Stalin for the release of his wife from the Gulag.

I was in Moscow in 1962 when my cousin, Lesha, a psychiatrist, successfully defended his dissertation for the degree of Doctor of Medicine. We held a party that went on for 48 hours in the family's two-room flat. I found myself sitting next to Lesha's boss, the head of a big psychiatric hospital. The talk was all about the case of a senior psychiatrist who released a patient into community care on condition that he regularly visited a psychiatric social worker. All went well until one day the patient decapitated the social worker, went around the flats on her floor and cut off 11 more heads, arranged them neatly into a 3 by 4 matrix and called the police to see his handiwork. The police were upset, especially since one of the heads belonged to the local police chief. The psychiatrist was accused of negligence but the medical fraternity supported him and he survived. I asked what happened to the killer. He was shot in spite of the legal code which prescribed life imprisonment for such murders. It was such an awful crime that an exception was made for him, said my companion. It did not occur to him that he was condoning an act by the state that flouted its own law.

Law nowadays, as it always has been, is created by the whims of the President who issues decrees, *Ukaz*, by the thousand. These are usually ill thought out, often contradictory, require withdrawal or amendment and are ignored by the rich and powerful. If one is neither, to get one's rights under such a law requires patience, knowledge of whom and how much to bribe and increasingly, strong-armed protection.

In December 1994 A deputy Minister of Science told me in Moscow that the complex system of taxation was killing education and research. I checked with the Rector of a recently declassified Institute who confirmed the existence of the tax structure but added "we are so important that we ignore it. Indeed we have just had a 50% rise in Government support."

Peter the Great, the moderniser through coercion,[8] thought that he could impose change and modernisation by a top down series of decrees. When one idea failed because the people would not or could not respond properly he issued yet another more detailed decree which had only to be obeyed to ensure success, when that failed another was issued and so on. Finally, he was immersed in the detail he wished to delegate, created a super state of powerful bureaucrats and enslaved the whole population. His system lasted almost till 1914 and was de facto recreated by the Bolsheviks from 1917 onward. He was the first Bolshevik. In effect Russians have lived under one form of slavery or another for 200 years.

According to Prime Minister Chernomyrdin, Post Soviet Russia has seen an increase in the number of state employees from 715,000 in the USSR to 921,000 for the Russian Federation with only half the population of the former; nearly 60% rise per capita [1995]. Other estimates suggest the rise is more like twice the number, giving a fourfold rise/capita. This is also a good old Russian tradition. In Tsarist times the nobility and upper classes accepted paid sinecures in Government that required only notional attendance at the office.

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[8] "The Reforms of Peter the Great. Progress Through Coercion", Evgenii Anisimov, M E Sharpe Inc, 1993.

Suspicion Of Foreigners & Foreign Ideas

This has always been prevalent in Russia. In olden times, Russians were forbidden to travel abroad without permission of the Tsar; if they did their families could be tortured, executed and have their property confiscated. Foreigners could only enter with special permission and their place of abode and travel were restricted. Contact with foreigners was discouraged. Until 1703 all domestic and foreign news was considered to be a State secret. Especially important was the preservation of the True Religion against Ungodly Europe. Every aspect of nationalist and religious propaganda is pressed into service even today. The KGB has released some papers to show that the Catholic Church was conniving with western military plans to invade Russia with the aim of supplanting orthodoxy. The KGB penetrated the Orthodox hierarchy before and during WW2 and has unashamedly exploited its appeal to the people.

The Decembrist rising in 1825 was organised by young nobles who had been in France after the defeat of Napoleon and absorbed some revolutionary, democratic ideas. As a result Tsar Nicholas I increased political repression, forming the 3rd Section of the Imperial Chancery; it acted as an intelligence body penetrating every "subversive" organisation. Stalin almost automatically exiled or jailed large numbers of soviet people and even ex-POWs who had lived under German occupation in WW2 because of the contamination that they might have received.

Currently Russians are complaining that:

> western engineers trying to help to improve the competitiveness of the Russian military-industrial complex now have all the defence secrets and thus obviate the need to have intelligence agents in Russia.
>
> admitting foreign world-class firms needed to improve the performance of the mineral extraction, transport and manufacturing is to sell the Russian birthright to foreigners.
>
> the Norwegian researchers into ecological damage in the Barents Sea are spying on the military.
>
> allowing a western firm to re-record old performances by top musicians in Russia is also to sell its national treasures abroad. The contract provides for royalties to be paid to Russian artists.

Coupled with this phobia it is not hard to show that historically Mother Russia has been attacked and invaded by - Tatars, Turks, Poles, Swedes, French under Napoleon, French and English in the Crimea, Germans in WWI & II, Japanese in 1905, English and Allies in the 1919-21 Intervention, Afghans and Muslims in the south. Truly Russia has been beleaguered, surrounded from all sides. Since 1917 the hostility, of course, has been compounded by class enemies bent on destroying the first Socialist State. Events from 1945-91 are seen through Russian eyes as continuing the ring of enemies bent on destruction of USSR. It is as well to keep in mind Tutchev's remark "Russia cannot be understood with the mind alone".

A frequently heard remark from even quite balanced Russians illustrates some of the basic features which mark contemporary Russia:

> *"We are a proud people with over a thousand years of civilised history. Every intervention from foreigners has been to the detriment of Russia. We*

> *saved western civilisation from tyranny at least three times: Once from the Tatars whose occupation we endured for 300 years; once from Napoleon and more recently from Hitler. We have learned in the past how to absorb and adapt foreign ways to suit our circumstances. No one can save us except ourselves. If you do not like our way of doing things or our policies and you threaten to remove your aid in order to make us follow your wishes then we will do without your aid. Our ability to survive, to suffer, to endure hardships for decades indeed centuries is legendary and we will do it again rather than bow the knee to suit foreigners."*

This is the heroic view of Russian history which can be justified by a careful selection of facts. It represents a widespread viewpoint which we would do well to understand.

Romantic Paranoia

> *" We have two complaints against the West; firstly that you have not given us the aid that was promised, secondly that you do not accord us the respect due to a Great Power."*[9]

How can one be simultaneously a beggar and a Great Power? What were his criteria for the latter? "Our mineral wealth, our intellectuals, our huge territory". All poorly exploited potential sources. By these criteria Brazil is a Great Power. However, before we dismiss this observation let us reflect. Did we consider the USSR and Tsarist Russia before it, at the turn of the 19th/20th century, to be a Great Power because of those potentials or because to them were added a mighty military machine which the Ruler did not hesitate to use in the perceived interests of his country? I have in mind the expansionist policies of Pan-Slavism, and the attack in 1939 on Finland by Stalin in what he regarded as a preventive strike. Was the USSR post 1945 regarded as a Great Power because she was feared? If the answers to those questions are "Yes", then we surely would be unwise to deprecate Russia today when her military strength is weak. We would be inviting the Russians to rebuild that strength in order to command our respect.

> *"Today, when Russia has already abandoned its pro-western romanticism which only hindered the development of a normal partnership, there is a danger of falling into another extreme-namely, that of the 'Soviet' tough confrontational rhetoric."*[10]

This is already happening. The present state of Russia is attributed entirely to evil Western policies; there is some truth in this view. NATO is again being cast as the enemy.

Let us take a moment to determine in what ways Russia is to be considered and therefore treated and respected by other Europeans as a Great Power over and above our acknowledgement of Brazil's economic and cultural potential. The following suggest themselves:

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9 Spoken by a senior Russian Academic from the USA & Canada Institute in Moscow to CSRC Sandhurst, Summer 1994.

10 Extract from the speech by Petr Shirshov, Chairman of the Committee on Defence and Security in the Russian Federation Council, at NAA Defence & Security Committee, 6 October 1995.

1. By virtue of her geographical position Russia has played significant roles throughout European history. Europe, at least to date, has been, at least in its own eyes, the cockpit of advanced civilisation.[11] Let us be reminded of Russia's self perception as the saviour of European Civilisation.

2. Other Powers in Europe and Asia Minor have had to take her fears, ambitions and potential as an ally or opponent into account for centuries.

3. She has contributed much to world culture, as much as can be expected having regard for her tragic history of repression of creativity. Out of that repression came the innovation of the serious novel with its analysis of personal character, to say nothing of 19th and 20th century music, ballet, opera and painting which culminated in the amalgam created by Diagilev. Russia, like Germany, by forcing many of its most talented peoples to emigrate has enriched other countries. In so doing they provide the proof that Russians are neither generically barbarians nor backward.

4. Russia absorbed and adapted the cultures of Western Europe, the Byzantine Empire and Christianity as well as suffering and surviving the cruelty of its invaders - Eastern, Western, Northern and Southern.

5. Russia absorbed and adapted the educational, military, commercial and industrial systems of western Europe. The first tradition remains in spite of difficulties at a high level for all its people. The last two were debased by Tsar and General Secretary alike; this trend has been accelerated since 1991 by so-called reformers spurred on by western economists.

6. Returning to its geographical position, we note that it is contiguous with China, Korea, Japan and with Muslim States to the south. Russia has a many centuries-old experience of those peoples and could provide expertise in collaboration with us in understanding and defusing any potential threats from them.

We should not gratuitously be seen by them to despise them, to treat them with inadequate respect nor to adopt a lofty tone if we consider ourselves as their tutors and benefactors. We should reflect that from the psychological point of view, recipients of charity are rarely grateful or friendly to the lordly provider. Russian folk tales are full of the proper respect due to people who are poor and down on their luck; they also warn of the consequences to the lordly of the converse. Come to think of it so is the New Testament; the Russian folklore is heavily based on traditional Christian values.

The Inheritance Of Belief In Miracles

Folklore, myths and legends may be considered to affect the emotional responses of people. According to a Russian scholar, fairy tales perform the role of a social utopia, they are a dream compensation for real life. They are relied upon especially by ultra-nationalists in their appeal for support and action against groups other than those considered to be their own. The militarists of Japan called in aid the ancient devotion to Emperor worship, to the uniqueness of the Japanese people.

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[11] Europeans frequently ignore the earlier achievements of the Chinese in science and technology (see J Needham's books), poetry, painting and ceramics, social organisation and philosophy and exploration (see the seven long distance voyages by Zheng He (1405-33) in ships far larger than those of da Gama.

General Ludendorff is supposed to have said that the old German and Scandinavian Gods such as Thor were much more likeable than Christian Gods; Hitlerian propaganda relied on those myths to propagate the untruth of a pure and superior German race. Mussolini had to invent a glorious past; most Italians were reluctant to fight for King & Country in WWII.

The English have few myths and legends, theirs are Celtic or Norman. Perhaps this is why the English are pragmatic, impatient with theories, are emotionally reserved, perhaps to their own disadvantage, and why the Celts are less disciplined and why they have a historical affinity with Slavs. This is an interesting commentary on the contrasts of English military folklore and that of some other nations: the English are proud to recall their serious defeats. For example: the retreat from Coruna, the Dardanelles, Dunkirk. A catastrophe has its advantage, it makes people looking into the abyss bestir themselves. A gradual slow death, say by economic decline as is being experienced by the Russians, and indeed by some west European countries, including Britain, does not have that effect.

Russian folklore[12] is enduring and is all about accepting one's fate, knowing one's humble place in society, yet poking sly fun at the Ruler who is often less wise than the peasant, Ivan the Fool. But its most exaggerated and possibly dangerous features are those which glorify magical, epic deeds of victory over great odds, expectation of deliverance by miracle and without personal effort and lastly those which demonstrate the superiority of Russian culture over all others. The danger lies, in my view, in that such romantic concepts allow Russians to believe their own illusions. One such tale tells of a 10 year old boy who with 29 companions defeated the army of the Turkish Sultan that was threatening Kiev in the Middle Ages. Another ends, *"Thus not only mighty men have luck! He who shouts loudest about himself fares best."* Another well known tale concerns the gift presented by an English king, possibly Henry VIII, to the Tsar. It was an exquisite, tiny, jewelled gold flea. The Tsar was determined to show that anything English craftsmen could do a Russian could do better. So he ordered his man to fit another version of the flea within the feet of the original; he then returned the gift.

The belief in miracles to my mind goes some way in explaining the credulity of Russians in trusting their money to bankers, promoters of chain letter 'investment' schemes, in astrology, strange and enslaving religious cults such as the Moonies, medicines appropriate more to witchcraft than to science, their willingness to be hypnotised by TV personalities into orgasm and speaking with tongues. True, these irrationalities were repressed by the Soviets and what was forbidden and is now available exercises a certain appeal, but especially to those who are predisposed to believe in the irrational.

The legends also lead to

Unjustified Boasting

"What I have here is unique, it is far superior to anything in the West".

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[12] Suggested reading: "Russian Fairy Tales" in English. A selection from Afanasev's books, ed R Jackson, Routledge. The best tales, nearly 600, were collected by Afanasev in 19th century but the first collections were made by an Oxford doctor of medicine, Samuel Collins (1619-70) who was physician to Peter the Great's father, Tsar Alexei Mikhailovich. Another Englishman, Richard James, wrote down secular folk songs, returning to Oxford in 1620. His collection is to be found in the Ashmolean.

This is an oft heard remark by scientists, engineers and administrators in fSU, especially the mediocre ones. It usually turns out to be old hat and not very wonderful anyway. In other countries one hears from the truly great, "I would like to show you something that may interest you". The Russian has not bothered to look elsewhere, not even in his own city let alone abroad. If he invented it, it must be the best, since everyone knows that soviet science is the best. This boasting is irritating and self-defeating. The problem is that many Russians to this day believe it to be true. And therefore everyone demands its continued subsidy.

There is also a basic problem about Soviet and Russian "science". It is the preference for

Philosophising Instead Of Applying One's Intellect To Solving Useful Problems

This is an old Russian disease; the papers, party meetings and even the scientific press was and still is full of philosophy. It is easier to blather on in a dialectical fashion than to get down to some real work. On that basis even the incompetent, with good party connections, could get a PhD or even DSc. In spite of Marx's view that theory without submission to practical test was useless the Communists eagerly adopted the old Russian love of chatter. It was probably Lenin assisted by Stalin who picked up this habit as a means of "educating the masses through a higher culture by the vanguard of the proletariat." This approach leads to solemn discussions purporting to find an important philosophical content in day to day activities like making a film, or using a telephone. Mark Twain's book "A Connecticut Yankee at the Court of King Arthur" beautifully parodies such stuff. [AK himself wrote a parody of Russian scientific research in the style of Gulliver's Travels.]

One might conclude that it is easy pickings for the lazy intellectual if he can receive a good stipend merely by talking about what needs to be done and the benefits to be gained once the "Shining Heights" have been achieved rather than actually doing the job. The disease is contagious; at a NATO conference in Kielce, Poland, a Polish professor of Economics commented after my talk "You are far too interested in facts, I am interested only in theory." I asked him, "How do you confirm your theory if you do not look at the facts?" He replied, "I don't bother."

> *"We need to maintain the strength of the Armed Forces according to one or other or both of the following rules of thumb - 1% of the population under arms at any one time or N soldiers per km of frontier. Compare with other countries ... Numbers of soldiers per km of borders: France has 79 soldiers, Germany, Poland and Romania 77; in China 123, in USA 90; we have 28; we have gone to the minimum. US Military Budget is $242 billion; ours is 79 trillion rubles [=$17.5 billion] in the draft budget but to make ends meet we need 134 [=$29.9 billion]."*[13]

This is standard fare in Russian military journals. The comparisons with USA are spurious. Its territory is big but has short frontiers, that with Canada is "open" with an ally. Mexican problems require police patrols more than armed forces. The 1% figure was an 18th century "norm". Is it still in the tables of the Senior Staff Colleges in Russia? Is such a mechanistic approach the norm for a senior Russian officer? Should he not be encouraged to think instead?

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[13] From an interview with Col-Gen Zherebetsov quoted in Rossiskaya Gazeta, 7 October 1995.

The Soviets subsidised aspects of their society often purely because they are seen by themselves to convey prestige upon the society, regime and its dogma. These activities were also intended to impress the rest of the world with the might and advanced nature of the new Soviet Society.[14] These aspects include the military, especially a large seven ocean Navy, even though it was so huge that in the 1980s it cost too much to keep in proper repair, space research, "science", the ballet, opera and music, chess as well as other sports, technical dinosaurs such as the world's largest heated ship tank, the world's largest optical telescope. These are, in the words of the Deputy Minister of Science "technological treasures that belong to the world, the West simply must pay for them now that we cannot afford to do so." Must - it is to be noted, regardless of whether we need them, want them or could afford them. In 1995 the principle that the customer decides is absent from his mind.

This love of big, visible toys demonstrating military might also has its parallel in Tsarist times. The Japanese in 1904/5 destroyed the Pacific and Baltic Russian Fleets at Tsushima. The Army did not do too well either. Tsar Nicholas II was faced with two groups of military advisers. The first was the French who counselled that he spend his resources building up his land forces so that the Russians could give a good account of themselves on the Eastern front against the Germans in the coming war. On the other hand were the Admirals who advocated an enlarged and modernised Navy. The Tsar looked at the build up of the German and British Battle fleets and exclaimed, "How can Russia be a Great Power if we do not have the ships that my cousins have?" Neither the German nor the British battle fleets - as opposed to smaller craft - were particularly significant, except as threats, in 1914-18; the Russian fleets were bottled up in the Baltic and Black Seas and contributed even less to the war effort. The Army, deprived of resources, went into battle under-equipped, under-supplied, under-trained and poorly led. The losses and defeats led to the end of the tsarist regime and the contraction of its Empire. The same crude illusions and hankering after grandeur through dinosaurs has persisted since his day.

Soviet propaganda claimed that every technical advance had been invented in Tsarist and Soviet Russia before the western claimant. Major-General Thurnvald, the Czech Defence Attach, in London told me in summer 1995,

> *"When I was at school in Prague during the war we were told that the Germans invented everything; after the war we had to learn anew that it had all been invented by the Russians."*

It all seems a bit unnecessary since both Germany and Russia have had their fair share of outstanding scientists and engineers. Boasting and untruthfulness seem to be psychologically essential to a nationalistic regime.

The urge to subsidise the merely prestigious but socially useless has a long Russian history. For example, Russian nobles in the latter half of the 18th century were so prodigal, gambling and living well above their huge income derived from serfs that "the luxurious tastes and the excessive prodigality of a large part of our nobility will lead soon to most of our villages winding up in the hands of manufacturers, merchants, clerks, secretaries, doctors and surgeons and they, not we, will be the

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[14] Swallowed hook, line and sinker by people like Bernard Shaw and the Webbs who wrote a book called "Soviet Communism, A New Civilisation?"

masters and proprietors".[15] As a result, the Government established from 1754 to 1786 several banks to lend to impoverished nobles. The point was to rescue them from usury of private moneylenders.

Empress Elizabeth (1741-61) in her *ukaz* proclaimed " many of our subjects, mostly from the nobility, having need of money have been compelled to borrow from others at high rates of interest and with big collateral". In 1797 the Tsar Paul wrote "with extreme grief we see that many noble families are groaning under the burden of debt, having fallen into the hands of greedy misers and usurers." By 1800 the Government loans exceeded all other state expenditures. In the end these debts were forgiven. The money was a gift from the State to the Noble drones. Loans were rarely foreclosed because their purpose was to save the properties of the nobles.[16]

The difference between 1800 and 1995 is that then the State could and did pay; now it cannot and should not continue to subsidise unnecessarily large numbers of ex-Soviet drones in, for example, academies and military factories nor should the West allow its resources to be used in this way. They are being misused and squandered on projects that cannot pay their own way so that eventually Russian debts to the advanced industrial countries will have to be written off whilst the state of the country does not improve. The indebtedness of loss-making enterprises will also be written off since the purpose of subsidies is to keep the prestigious but loss-making state enterprises in being in their present condition; the regime cannot see how to cope with the consequences of reorganisation even if it understood how to do it.[17]

As a result the Russians thought, until very recently, that foreigners would invest funds to bring up to acceptable standards of performance and competitiveness every aspect of their ramshackle society and its dangerous and uncompetitive industries which have even lost, to a large degree, their internal markets. West Germany has poured billions into the former DDR and still, five years on, the DDR is nowhere near the standards of West Germany. The DDR in many ways was economically ahead of the USSR and the rest of Eastern Europe. A simple calculation shows that similar expenditure per capita in fSU requires sums of money which do not exist, even if the conditions were favourable for effective investment.

The Oblomov Syndrome

In 1858 I A Goncharov published his work on the life of his hero - or anti-hero, Ilya Ilyich Oblomov, who, in spite of his serious anxieties about the declining fortunes of his estates, spends most of his life either in bed or contemplating trying to get up. His steward writes repeatedly to ask, in vain, for his master's guidance and influence over the peasants on the estate. His set of acquaintances urge him to join in the social life of St Petersburg, which in abstract attracts him but he lacks the

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15 Quoted in "Lord and Peasant in Russia from 9th-19th Century", chapter "Rich Noble, Poor Noble", Jerome Blum, Princeton University Press, 1961.

16 Ibid.

17 However, simply sacking them on the capitalist model will not do: social support comes through the employer and the State organs are not equipped or funded to deal with mass unemployment and retraining. Russian directors have a long tradition of looking after their people and do all in their power to support them and the pensioners of the enterprise. Loyalty downwards exists in civilian society even if it is less marked toward conscripts in the Armed Forces.

motivation and energy to dress and go out. His manservant criticises him but, along with his friends, cheats him and is just as slovenly and idle.

"Oblomschina", the condition of being Oblomov, is a model of Russian attitudes to work which are regrettably too prevalent. Some well known symptoms of this disease are: a talismanic belief that putting things on paper is the same as doing them, an indifference to keeping to agreed schedules and actions, a preference to theorise rather than to apply an undoubted intelligence to the identification and solution of real problems. These habits affect ordinary practical intercourse and are somewhat irritating. But Russians can be graceful at apology, add plausible reasons for the fault and are masters at improvisation. Such responses may suffice in social life but not so in the commercial world. "Oblomov" is required reading for foreigners with serious intentions.

'Initiative is Punishable' Another aspect of the Oblomov syndrome, with the same consequences as indolence but different causes, is the very real fear of taking responsibility for decisions. The possibility that these decisions may offend powerful interest groups and thus have unwelcome repercussions for one's own career (or indeed life, in these violent times as in Stalin's day) results in even the most trivial decisions being referred to the boss, who may well do the same and refer them to his boss. The top boss in his turn wants all the decisions, however unimportant, referred to himself, because he is in charge. This causes a logjam at the top, effective decisions cannot be taken, and the whole system grinds to a halt.

The Shock Of The Loss Of Empire[18]

The Russian Empire is a land empire contiguous with the heartland, Muscovy, of its dominant people. The Russian Empire at various times during the past grew outwards in every direction from Muscovy; Russian losses following the withdrawal from its Warsaw pact allies in the late 1980s were followed by the disintegration of the USSR in 1991; the CIS can not be regarded (except by certain Russians) as the new Russian Empire. Points of special importance are: Russian expansion into the Empire extends back many hundreds of years. Russians as farmers, workers, administrators, soldiers, retired pensioners and those exiled and deported by the Authorities have lived in these territories for hundreds of years. Except for the deported nations, they regard them as "home". Indeed most of them have no other home and no means of acquiring one back in Muscovy. Like other colonisers, the Russians have had their ups and downs in relations with the "colonised", but in their own mind the Russians have been the superior people and imposed their own culture on the 'natives'.

For these reasons the Baltic Republics, Ukraine, Belarus, the Caucasus and the areas of central and Eastern Siberia are "ours". Under the Soviets the separate republics were only independent on paper - and who in Soviet Union paid any attention to paper, especially Constitutions? They were fully integrated into every aspect of the Soviet system. Their economies are interlocked with those of the territories dependent upon the needs, orders and supplies of materials and components largely from Russia. The whole military system created by the Soviets was interlocked. The Soviet Officer Corps was almost entirely composed of Slavs with Russians predominating, followed by Ukrainians and Belarussians.[19]

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[18] The paper "The End of Empire", May 1995, by my colleague Antony Clayton provides a short, stimulating account.

[19] Belarussian independence presents a somewhat unreal picture; it is possible that there will be a gradual reunion with Russia.

Ukraine occupies a special place in Russian history, heart and mind. It was the origin of Christianity in Russia, and of the Russian orthodox religion, language and alphabet. In spite of the usual battles between neighbouring lords, the relationship from the Russian point of view has been one of harmony and indeed identity of culture. Naturally Ukrainian nationalists who struggled for independence from Turk, Pole, Hungarian, Swede and Russian alike, saw it differently. The separation of the Ukraine into an independent state is more of an affront to Russians than that of other Republics. An analogue in England would be a unilateral declaration of independence by the County of Kent, with the Archbishop of Canterbury, the head of the Anglican Church, living abroad and proclaiming a rival Protestant Church owning the ancient Cathedral, dating back to St Augustine, and all church property in Kent[20], leaving the Anglicans under the Archbishop of York.

The withdrawal from the garrisons of its Warsaw Pact allies and from the Baltic Republics and Ukraine has had two devastating effects on the Russian armed forces. The first is the retreat into the homeland of hundreds of thousands of officers who regarded their garrisons and barracks as their permanent homes; they like the civilians in the Empire had none other. Many retired locally in congenial areas such as the Baltic Republics, Kaliningrad. Other favoured locations were to be found in the South, in "our" territories of the Caucasus and the Crimea. In the Good Old Days the Soviet Army could provide retired officers with a flat or a dacha there or in the capital cities of their choice. The retreat coincided with the collapse of the Soviet economy which provided the main reason for the political and military chaos following the events of August 1991. (Of course the collapse of the economy was itself due to the over-militarisation of the USSR and to the incompetence and inefficiency of its centrally directed Command Economy, but that is a subject for a different paper.)[21]

The second catastrophic effect, from the point of view of the Russian Ministry of Defence, was the loss of all the forward bases, garrisons, early warning systems, repair workshops, depots and living quarters. All these have to be re-located within Russia itself. The means for doing so were limited, although ameliorated by the German Government in paying for the relocation, training and building of accommodation for the garrisons stationed in the DDR.[22] Furthermore the MOD was laggardly in planning for the moves; some divisions were dumped into open fields and left to improvise their living and other quarters. As a result many officers are justifiably disgruntled, unhappy with their lot and their Government and politicians. Small wonder that there are many in the Armed Forces who see the withdrawal and its architect, M S Gorbachev, as a betrayal of loyalty toward them. The Russian Armed Forces continue to see their need to prepare to engage in future conflict as a massive, high technology force and that their potential opponent continues to lie in the West.

Red Army training exercises post Second World War usually predicated a NATO strike which had to be repelled by a massive counter blow; it is probable that staff plans to invade Western Europe, to occupy the Rhine and the Channel Ports, lay more in western minds than in Russian ones. It is almost certain that, during the

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[20] In Ukraine the current arguments between the Ukrainian and the Russian Orthodox churches, the Roman Catholic and the Greek catholic churches are about property more than about doctrine.

[21] The argument is developed in some papers available from CSRC.

[22] A recent article in the Russian Press quotes the admiring remarks of returning servicemen for their Turkish built flats "We never had it so good, not even in Germany", Rabochaya tribuna, 2 October 1995, p1&3.

Cold War, the military on both sides used their arguments of potential threats from the other side to increase support for R&D and for military expenditure. The Russian people have not exhibited the latent, and sometimes patent, chauvinism and support for expansion that has, for example, characterised the German from the middle of the 19th to the middle of the 20th centuries.

This is how most Russians view themselves today; they can be mobilised for defence of the homeland but do not support adventurism, not even in Chechnya. Many a Regimental Commander has had conscripts dragged out of barracks by their mothers. The lies and deceits of the authorities concerning the Afghan war helped to turn the old patriotism of many Russian women to hostility to military service for their menfolk.[23]

Western Approaches To Russia

One has also to reflect upon the experiences of West European Powers in their own retreat from Empire. The British withdrawal coincided with the upturn in demand following the end of WWII; the economic conditions although not altogether favourable were better than those which face Russia. It was possible for servicemen and civilians alike to return "home", to find a home and pay their way whether in retirement or in a second career. The French have had a less pleasant experience in their withdrawal, especially from Algeria. This was both legally and emotionally regarded as part of Metropolitan France; the colonisers regarded it as their permanent home. France even today has a large immigrant population of both "native" French and Algerians, many of whom do not feel integrated into French life and many do not wish to be French. Their experience is not unique; other countries, including Portugal, Belgium and Holland, even Greece and Turkey, have not been free of difficulties; the experience should provide grounds at least for sympathetic understanding of the Russian predicament.

The above should be kept in mind when considering the chances of success in getting the Russians to alter their ways and to accept that we are genuinely trying to help them and not to destroy them further. The following are some examples of some western attitudes which are counter-productive:

"Communism is dead, capitalism won." A frequently heard comment, especially from Americans.

Which version of Western capitalism are we talking about? Are they all successful in delivering well being to the nation? How long did it take for the present state of affairs to evolve, even assuming positive answers to the previous two questions? Is Communism really dead? Did it not provide for the mass of the people in USSR and elsewhere in Eastern Europe a better life than they are experiencing now? Is this not why practically every country in C&E Europe has returned communists in one guise or another to power? The Russians see correctly and clearly that whereas we have in western Europe a civilised form of capitalism, theirs is a "Capitalism of Robbers".

"Acquire a parliamentary democracy, without it membership of the EU and NATO will not be possible ". Chorus of advice from the West.

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[23] See "Zinky Boys, Soviet voices from a forgotten war", Svetlana Alexievich in English translation, Chatto & Windus, London, 1992.

How long did it take us, Great Britain for example, to evolve a true parliamentary democracy with full and equal adult suffrage? How long has it taken for Governments to consider the wishes of the people, to pass laws that would be obeyed and therefore could be policed? Do our people fully accept their political system?

"Become like us, learn from the hordes of highly paid consultants who will tell you how a market economy works." A common aspect of the methods of western aid agencies.

A wise person in a situation new to him asks himself "what has this situation to teach me before I can be effective?" This is especially true when he is ignorant of the culture of the country. I define culture as "the way of life". In the Royal Navy we have a phrase "Different ships, different long splices". In other words, there is more than one way of going about a job, one has to understand it, respect the reasons for it before attempting to alter it.

"A market economy can be defined thus: if I wake up at 2am in my Manhattan apartment and I feel hungry for a Kentucky Fried chicken, all I have to do is to call up and it's delivered within 15 minutes". An American businessman at a lecture for Russian army officers at George Marshall School, Garmisch Partenkirchen. This phrase was the subject of a bitter, sarcastic article in Izvestiya.[24]

The European Communist Command economy was nearly monolithic, but there are many models of a market economy. Russian students actually are looking for the Holy Grail and are hurt by flippant remarks like that, even when they do contain a grain of symbolic truth. They consider that they are not being taken seriously.

"Put in place the financial superstructure of capitalism such as a stock market, make the ruble freely convertible and the benefits will permeate down and you will have a successful, competitive economy." Advice from both British and American macro-economists and Chicago-boy monetarists.

A top-down approach has had some success when aimed at modifying an already working market economy, but it has absolutely no useful effect on promoting competitiveness in agriculture, industry or infrastructure which has never had to work in that way. Furthermore massive loans to third world countries have often done more harm than good. Their repayments of interests alone exceed their total exports in some cases.

Summary & Conclusions

Russia is still driven by its old, inherited forces

- Autocratic, Patrimonial Government
- The resources of the State belong to the Government
- The Heads of Government fight for power, privilege and spoils
- The State is not subject to Legal constraint
- The Head of State continues to issue ill-thought out *ukaz* which may not be capable of implementation and are ignored by the powerful
- An assumption that centrist direction and policies are the only way for Russia

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[24] V Nadein, Izvestiya, 26 August 1994, p3.

A suspicion and distrust of everything foreign, accompanied by an extreme sense of defensiveness rather than expansionist aggression
An easily fostered extreme nationalism glorifying Russianness
Belief in their own illusions of greatness
Faith in irrational, even mystical and magical solutions to problems without the need for personal effort
The Oblomov syndrome relates to lack of personal effort and to a casual approach to obligations
The paradoxical concept that they can do it all themselves in spite of the above
A touchiness concerning their own dignity.

To which must be added the experience post 1991, ie

A loss of Empire and of a sense of national identity
The catastrophic decline in living, health and environmental standards, law and order, the social fabric, increased crime and blatant corruption from the top downward
The exploitation by the nationalists, communists and allies of all the above and increasingly to lay the blame at the door of the West and of the Russian reformers.

These tendencies are fuelled by:

Western attitudes of superiority, disdain of even the most modest appeals to take Russian sensibilities into account, for example in the North Atlantic Council
Expensive and inappropriate counselling by western consultants with little understanding of Russian culture, conditions and practicalities.

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The views expressed are those of the
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Continuity & Conflict in Russian Government

The formal structures and performance of post-Soviet governments of Russia are fundamentally unsatisfactory to most Russians as well as to foreigners who observe them with dismay, offer advice in order to bring the system into some sort of conformity with their own experience and thus increase their confidence in its stability both for Russia's sake as well as for their own involvement.

Foreign and Russian criticisms have much in common; they include: the stream of arbitrary, often contradictory decrees and laws; a constitution that allows the President the right to dismiss a government frequently and often for personal reasons; a failure to stabilise and improve the economy and the lot of the population; a failure of "law and order" and of a defence of the currency, whilst simultaneously encouraging the growth of robber baron capitalism on a vast scale. Adaptation of the top level financial institutions of capitalism has not, contrary to the expections of some western economists, but unsurprisingly to some other students knowledgeable in Russian affairs, led to useful reforms at the working levels of the national economy.

But the recommendations of nearly all Western political theorists and economists on the one hand and of most of the Russian elite on the other, however much they disagree amongst themselves, are incompatible; both think that the recipes of the other would lead to further catastrophe. The problem is that in this respect they are both right. Everyone seems to be searching for the perfect solution on paper to correspond with their own experience. Perfect, theoretical, tidy solutions appeal to Russian politicians, rulers, academics and economists who have looked for them for generations and even published them. But if ever there was a country where such solutions are unworkable it is Russia, particularly if they have to be applied immediately and in a big dose. "Swallow the medicine, Dear, and when you wake up it will all be wonderful." Yes, for the few who duped and those who enriched themselves at the expense of the people they care nothing for. The authors of the Plan will not admit their error, even when the consequences are there for all to see.[1] And Russia will still be in a mess, maybe a different one but a mess just the same.

The miracle is that Russia has a government at all. The country is both too big and too Russian for it to have been governable by Western methods. The only countries that even approach in size the old Russian or Soviet Empires or even Russia today are USA, Canada and Brazil. The first two developed from the west European traditions of the Reformation, the Renaissance and respect for the individual and his property rights; Russia experienced none of these ideas. USA and Canada both developed a workable system of government and crucially a division of power between federal and state governments over 150 years; workable because it could rely on the consent of its peoples.

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[1] One of my uncles was Kerensky's ambassador to London. Around 1928-30 Alexander Kerensky came to London, stayed in my uncle's house in Cambridge Terrace. As a very small boy I was allowed to come down to listen to the adults talking after dinner. Kerensky stood on a polar bearskin rug with his behind in the fireplace, a hand tucked into his jacket like Napoleon and declaimed in Russian: "It was all a mistake, the Bolsheviks should not have won and I should still be the Prime Minister of Russia". Even at that tender age I felt that something was not quite right with that remark.

Even more important, perhaps, for a proper appreciation of the structure of the government of Russia is to grasp the relationship between the ruler, be that a Tsar, or the General Secretary of the Communist Party, and now the President on the one hand and the Prime Minister and Ministers who are often regarded as the Government on the other.

President Yel'tsin's Administration [1999] is large, employing around 2,500 people working in every sphere of government; the Prime Minister and his heads of ministries are not members. The Presidential Administration can be regarded as the place where strategy is determined and decisions issued. The "Government" may best be seen as composed of administrators rather than Ministers; the Prime Minister is simply the Principal Administrative Officer.

This structure is very close to that which Yel'tsin inherited; the central Committee of the Communist Party which provided the General Secretary and the Politburo with research and recommendations. It can therefore be seen to be a serious error to consider this system as similar to that of the US President's Executive Office or the British Prime Minister's Cabinet Office and the relationships between those bodies and people and the Departments and Ministries of the US and UK Governments respectively.

If we are to cooperate usefully with Russia, we must understand the problems of governing Russia and be able to assess the likely options for change. To do this we must try to understand the reasons for the rapid and apparently illogical changes in government and for disparate opinions held by people who are not necessarily either stupid, inexperienced in their own politics or have evil intentions.

The present state of Russia and its government has many instructive parallels from earlier in its own history. These are not only in the structure of government, especially the relations between the ruler at the centre and the regions of European Russia and its far flung empires, but also in the way the people in charge of the formal structures were forced to resort to unofficial, personal arrangements that often ignored or broke the law and instructions from above. It is this history that gives rise to the national myths, structures and habits of work of the present day elite. Whether they are familiar or not with their details, in outline they all, regardless of political stance, make obeisance to them and are trapped by their history. It is wrong to assume that the formal structures of post-Soviet Russian government are workable parallels with late twentieth century systems in western Europe and North America, however much they may resemble them on paper.

The Emergence Of Government In Russia

Rus[2], as Tsar Nicholas II preferred to call his domains rather than Russia, had its beginnings in small territories around Moscow and Kiev. The inhabitants of the former were probably descended from a Norse tribe of that name around Lake Ladoga. The latter invited a Norseman to rule over their petty chieftains who were

[2] The mystique of Rus still pervades the minds and souls of extreme nationalist Russians. It has a similar effect on Russian nationalists as that of the Pagan Teuton gods on Ludendorff, Himmler and their successors in Germany.

rich but too quarrelsome.[3] The Tatar hordes subdued both in the 13th century, with the usual bloodshed after the surrender on the battlefield to entertain themselves and to overawe the natives, whose chieftains became their vassal princes and who were bound to find tribute to the end of the 16th century; some elements remained of tribute to some of the Tatars almost to the beginnings of the 18th century.

Map 1: Russia in 1462

Source: Grey, op cit.

In order to collect the tribute from the peasants over a relatively large area, the ruler appointed a personal agent, a tax farmer, in each region to collect taxes. This person appointed his own henchmen, who in turn generated a hierarchy of local subordinates to get money from individuals in every village. The system depended on personal, quite intimate relations between junior and senior. The normal way each person at every level dealt with the demands from higher up was to attempt to reduce the demands by bribing his superior. Juniors also felt that if their immediate superiors were extortionate then an appeal to the ruler, who must have the interests of all his subjects at heart, should produce a result in his favour. This

[3] England of course was also ruled by Normans, but through conquest. It is said that King Harold's daughter was taken to France and later married the son of a Kievan King who founded Moscow – a pretty myth with some small truth.

is a familiar system from feudal society[4], which lasted far longer in Russia than in western Europe. It is perhaps not too far-fetched to suggest that these facets from that period - personal relationships between people in the hierarchy, faith in the good intentions of the ruler and bribery at every level in between, have been a normal aspect of life throughout the Tsarist regime, the Soviet until the present day.[5] This is far more prevalent than in the west. As we shall see, officials throughout Russian history, especially in the country, were often personal representatives of the Tsar, with powers to interpret as they wished any law that existed. It has often been argued that conditions in this far-flung land were so different that it was impossible to apply a law uniformly.

The Consolidation Of Russia Under Ivan III To Ivan IV

Early Attempts to Unify Russia[6] Muscovy, especially under Ivan III, who ruled from 1462-1505, his son Vassili III and Ivan IV - the Terrible, expanded in the 14th to 16th centuries and the Knyaz - Dukes - appointed personal representatives to each territory to govern them. Their primary duties were limited to defence, keeping the peace, raising taxes and sufficient men for the army and internal order. This was the traditional concept that Muscovite Rulers had of the role of the State. The representatives, often called Voevodi - a title with a military connotation and of Polish origin - wielded arbitrary power and because of their isolation from Moscow were difficult to control. They were also the local judges. The Voevoda was supposed to live by holding back part of the collected taxes; the process was called, significantly, *kormleniye* (feeding). Ivan the Terrible abolished the practice. Unsurprisingly, the current Russian press has revived the term in its discussions on the performance of regional governments, governors, oligarchs and subordinates.

Ivan III is regarded as a Fabian, proceeding slowly and step by step in control of the realm and of the newly conquered territories, as Ian Grey[7] noted. The analysis of this period cannot be better put than it was by Grey in his chapter "Administration of Muscovy":

> *"It was necessary to integrate them so that their administration and fiscal and judicial practices were coordinated with the rest of the realm. They were allowed to keep their own administrations for a time but Ivan appointed his own governors to whom the regional administration worked instead of to the former ruler. Subject to this difference the regional authorities enjoyed considerable autonomy. But gradually the Muscovite system was being applied throughout Muscovy and Greater Russia. The Muscovite forms of Government appropriate to a small principality had to be adapted to the problems of a vast, new nation. There were two*

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4 And perhaps in Empires with underpaid officials and tax-collectors.

5 Even the last Tsar held court in St Petersburg when he heard petitions against sentences passed by Law Courts and frequently annulled them. Ordinary people felt that if only the Tsar knew the injustices perpetrated against them by officials he would give them justice, because he had the true interests of each one of them at heart. This myth was assiduously fostered by Tsars and Monarchists. Old Bolsheviks, sentenced to death or long terms in the Gulag by State prosecutors on trumped-up charges felt the same about Stalin. To this day in Russia, people seek from a friend an introduction to, say, a surgeon or the ward sister, in the belief that in so doing they will get better treatment than if they are purely unknown and not introduced.

6 Most of the facts of the following 3 sections are taken from the excellent Introduction in Richard G Robbins, op cit. This provides a succinct account of the development of Russian government up to the dawn of the 20th Century.

7 See literature.

branches to the administration, that of the state and the palace, which provided the special guard of the Grand Prince, running his private estates, including stables, falconry, provision of food etc. Because of his great wealth the private administration rivalled that of the state administration." (Compare with the reported expenditure of President Yel'tsin's private office).

"The State administration collected the tribute, still levied even after they ceased paying it to the Horde. It also was responsible for military conscription, law and administration of justice. The provinces were run by the appointees of the Grand Prince."

But Grey noted "difficulties arose" in the newly annexed territories in which people had no experience of Muscovite practices. Ivan III found it necessary to enact charters regulating the obligations of such people to his officials.

"The charter granted to the town of Beloozero in 1488 provided for representation of the local people in the administration, legal procedures, and payments to local officials. But a single charter for the whole country was required which was promulgated in the "sudebnik" of 1497; this was based on the ancient Russian code, the Russkaya Pravda emanating from Kiev and Pskov in the 14th and 15th centuries. The sudebnik provided the right of peasants to move freely from the estates of their landlords, but this could be exercised only around 26th November after the harvest. A century later this was abolished and the era of true serfdom began.

"In the 15th century the political and administrative union of Great Russia was developing rapidly, but certain divisions remained, these were primarily social and economic, based on the system of land ownership and were so deep-rooted that they persisted for many years to come. The main categories of land at this time were (1) state lands, (2) lands of the Great Prince, (3) the patrimonial estates of the lesser princes, which they retained after surrendering their independence and becoming the serving princes of the Grand Prince, (4) boyar lands which included all privately owned land and (5) church and monastery lands.

"The serving princes and boyars were the chief danger to the authority of the Grand Prince. The regional charters and the sudebnik did not apply to the patrimonial estates or to church and monastery lands... To Ivan III it was an anomaly that these princes and their domains should stand outside his authority and an affront to his policy of the complete unification of the country. But he proceeded cautiously, making no direct attack on these patrimonial immunities. His remedy was to establish landholding based on service, creating the pomestie in place of the patrimonial estates, the votchina... The vast estates of the church and the exemption from military service of its people were to prove increasingly unacceptable to Ivan III as he struggled against his enemies and unified his country.

"The great need at this time was for a centralized military organisation, and this was not something that could be erected suddenly. But Ivan III took important steps towards creating the new class of gentry who could serve as the core of such an organisation. The army on which Ivan III depended was based on his personal corps, known as his dvor,

> *supplemented by members of the lower gentry, the boyars's sons as they were called, serving under his command or under the command of the voevoda, appointed by him. His brothers and the serving princes all with their personal troops rallied to the summons of the Grand Prince. In addition he could mobilise merchants and citizens in Moscow and other towns as well as enlisting Tatar and Cossack forces. All of these troops were mounted, except for the townsfolk who served as infantry."*

Grey goes on to note that:

> *"The serving gentry were more politically reliable than the rest; the problem was that there were no means of paying them. Ivan tried to solve the problem by granting them land but this was in short supply since so much of it was forested; the small areas that were cleared belonged to the peasants who paid taxes to the Prince. He gradually dispossessed the boyars who had opposed him and gave their lands, on condition of service, to people from Moscow."*

The reigns that began and ended with the two Ivans exhibited the familiar struggles between neighbouring lords in any country of the period. In Russia it saw the conflict between the rulers of towns such as Novgorod and Pskov and their submission to the suzerainty of Moscow, albeit punctuated with several rebellions, pretenders true and false. But the principal struggles lay between the Russians and the Tatars to the South and East and with the Poles, Teutonic Knights and Lithuanians and Swedes to the North and West. The victory over a Tatar Horde in Khazan in 1552 and later that of Astrakhan provided Muscovy with a strong hold over their eastern borders on the Volga. Merchant adventurers such as the Stroganovs[8] began the exploration and colonisation of Siberia beyond the Urals. Ivan IV became strong enough to invest himself the title of Tsar of All the Russias; this was the style of the Tsars to the last. The western wars saw the incorporation of some territories but these were lost in 1582.

The normal institutions of government barely existed, so administration was rudimentary and largely personal. The circumstances were right for extortion, corruption, arbitrary government by the agents of the rulers, the Voevodi, who throughout the 17th century continued to exploit the people. Even had they wished, the ability of the agents to improve local conditions was severely constrained by their lack of resources, but above all by the limited concepts of their role imposed by Moscow. In contrast to their own limited administrative structure, in the late 17th century they were harassed and deluged with orders from over 40 separate offices in Moscow.[9]

Peter I

One may regard Peter I as a forerunner of Napoleon Bonaparte and as the first Bolshevik. He set out to reconquer the lands traditionally regarded as Russian that Ivan III (father of the Terrible) had first conquered and then lost. This involved decades of war against the Turks, Swedes, Poles and Lithuanians. To achieve these aims it was necessary to increase the output of the country, to enlarge the Army, build a Navy and to equip and man them. Total mobilisation required a totally different central government, increased power over the nobles and the further reduction of the peasantry to serfdom. He was the first Tsar determined to

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8 The Boeuf came much later.

9 Yaney, op cit, p28.

modernise and to westernise Russia; he was opposed by many of the landed nobility and was impelled therefore to do so by decree enforced through coercion. As the Empire expanded it needed more widespread and better administration; unlike Napoleon, he could not employ the elite of the newly conquered lands to run them; he had only the small circle of Russian nobles to do the job and they had to be harnessed often against their instincts. He set about reforming the old system with energy. Initially he strengthened the duties and powers of the viceregal provincial chiefs, who were now to be responsible for economic growth through the development of roads, agriculture, creating stocks of grain, developing manufactures and factories for military use and also to promote his orders to create an educational system. The country was divided into ten very large *Guberniya* to which he appointed his trusted favourites as Governors. Each *guberniya* was divided into provinces. Much of the apparatus of the central state administration was transferred to work under these governors. The local nobility elected as councillors to advise the governors were to act as chairmen, not the rulers of the Councils. This system lasted from 1707-19, when Peter restored many of the devolved functions to the Senate and its "colleges", ie departments, in St Petersburg. The Provinces, under a leader with various titles including that of Governor, but usually Voevoda, now became the primary unit of administration which was bolstered or hindered by having to share authority with agencies of the central government and with the army and courts. The landed gentry were inadequate for the tasks set them, their levels of primary education and personal development were not up to the job. They were no match for the Voevoda and governors, becoming merely their subordinates rather than advisers.

Peter's attempts create a workable provincial administration cannot be said to have succeeded, partly because he was impatient and inconsistent and partly because of the low abilities and indifference of the landed gentry.

Peter's reforms show him as the first of a long line of rulers of Russia who thought they knew their own mind and intentions, and who initiated a series of decrees, often contradictory, as they found that these failed to achieve their intentions. The Tsar's favourites often got their way, even when they were in a minority of the Tsar's advisors. Furthermore, their laws were frequently ignored and bent to suit the purposes of the individuals who had to carry them out. They still are. The list of vacillating autocrats includes all the Tsars and Lenin and his immediate coterie during the first few years of Bolshevik rule before the soviet system settled down - some would say ossified - under that supreme manipulator of the bureaucracy, Joseph Stalin. Our contemporary hero, Boris Nikolayevich Yel'tsin probably issues more decrees per annum than any of his predecessors. Just as in the past, few of them are effective. But when all the criticisms are voiced we have to recognise that Peter, like Napoleon, left a state apparatus that in essence survived to the end of the 19th Century; aspects of it are still visible and still influence contemporary Russian political and administrative thinking. His successors did nothing useful in this regard until Catherine seized power in 1762.

Catherine II

Judging by her memoirs her life as the betrothed and wife of the heir to the throne was a demure one, almost apparently, a subject for Jane Austen, but Catherine's powers of observation were her equal; so was her ability to dissemble. She had a will of iron to govern and she achieved it by a coup d'etat against her husband Peter III. From the chrysalis of a decorative female at court she emerged as energetic in politics as in the bedchamber. Coming from a background of the daughter of a

minor German prince she had some modern, European ideas of government and had been well schooled in Peter's ideas which she drew upon for her own reforms.

She restored the viceregal status of the governors, declared that they were the "masters of the *guberniya*", made them responsible only to herself and to the Senate and removed the supervisory authority of the Senate colleges. She was by all accounts concerned to develop the rural areas and provinces of Russia, providing the governors with an enlarged and better-paid staff. Later she realised that a thorough overhaul of local administration was necessary. A new law was promulgated in 1775, which reduced the size of Peter's 25 *guberniya*, increasing their number to 41 and later 50. Each *guberniya* was supposed to contain between 300,000-400,000 people. The *provintsiya* were abolished and the only subsidiary unit was the *uyezd* with between 20,000-30,000 inhabitants. Catherine was for direct rule, working through personally appointed governor-generals. They had the right of direct communication with her and they also sat in the Senate to represent the interests of their area.[10]

The governor-general was intended to be an active head of local administration, not a figurehead. He was to make decisions affecting the region. He had a governor, who was responsible for the daily functioning of the administration. The governor-general chaired the new Provincial Board, whose membership included the governor, provincial procurator and two councillors appointed by the Senate. It was served by clerks and other assistants. The Board was to govern in the name of the Empress. Catherine did not provide for a governor-general for each *guberniya* but combined several under one viceroy who did become more of a figure-head. Consequently the governors' powers were in practice increased. Furthermore the local nobilities proved incapable of performing their functions, leaving affairs increasingly to the governors, who, however, lost their previous military powers.

The procurators who were appointed to each region were independent of the regional government and reported directly to the Procurator-General in St Petersburg. They played an important role in Catherine's scheme; just as in Peter I's system, they were supposed to ensure that the laws were understood, obeyed and that the state agencies did their job and did not exceed their powers. This role resembles that of the Departmental Prefects in present-day France. They were supposed to protect the people from abuses by the police and bureaucracy. Catherine claimed to believe in improving the welfare of the people and the need to consult them. This must be subject to some doubt, since she favoured the nobility over all other classes, even to the extent of setting up a State Bank to pay their huge gambling debts to “avoid their estates falling into the hands of Jews and merchants”. She also owned hundreds of thousands of state serfs whom she gave away as presents to her favourites, who also benefited financially to the considerable detriment of the Exchequer.

Under the *guberniya*, the *uyezd* was to be run by the upper classes who elected all the local officials except for the fiscal agents and police. The nobles elected their Marshal for both the *guberniya* and *uyezd* and the chief of police. The towns were also empowered to run themselves through elected mayors and city councils.

Catherine's reforms are regarded as creating a unified administration with a comprehensive network of institutions in the regions throughout the Empire, but it

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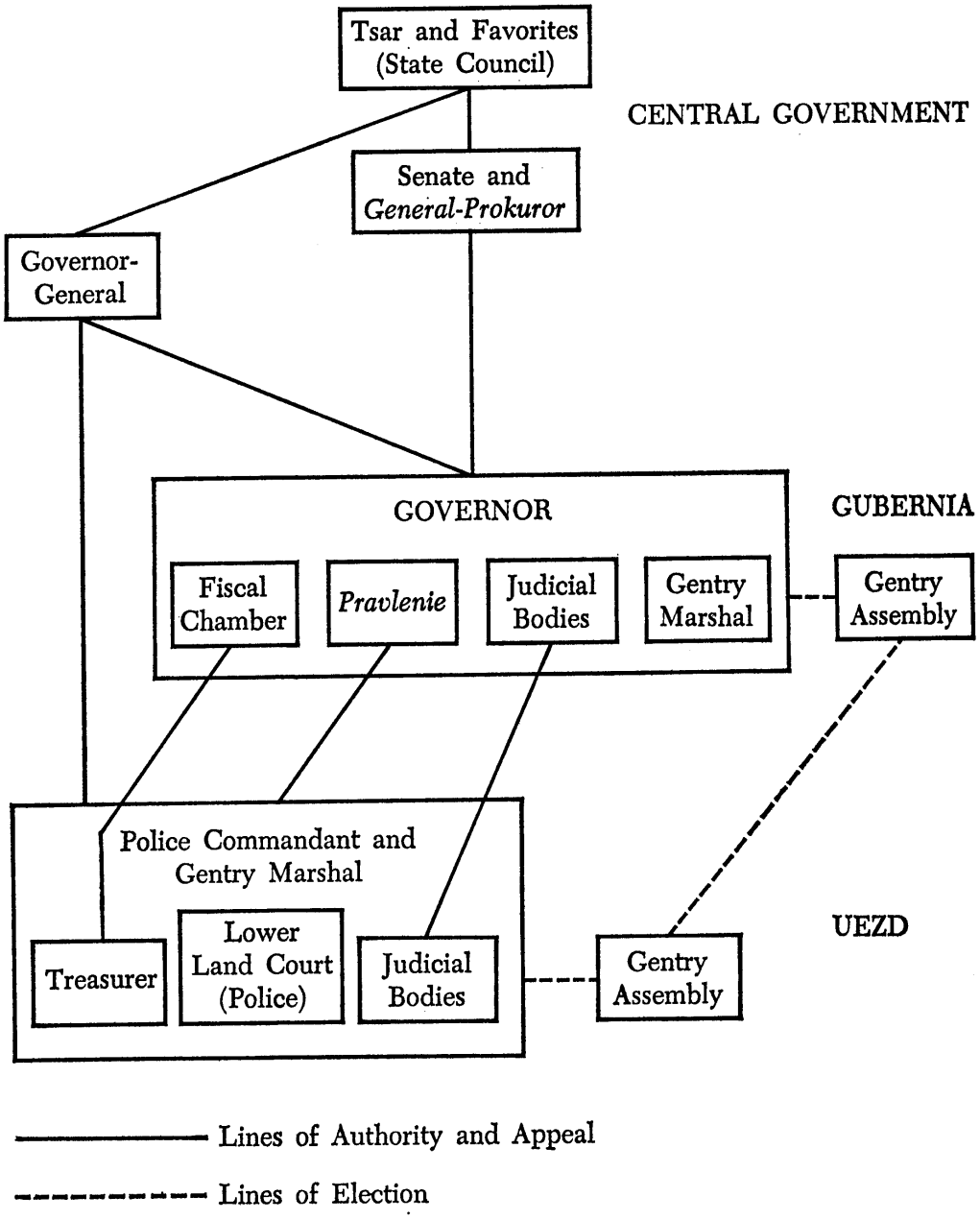
[10] Yel’tsin also originally appointed all the governors, but they were subsequently elected; they also sit of right in the Federation Council, the equivalent of the Tsarist Senate.

did not last. Her successors preferred to revert to central administration and reduced the authority of the local institutions run by the upper classes.

Figure 1: The Structure of Regional Government Following Catherine's Decrees



Source: Yaney, op cit.

The 19th Century

Catherine's son the Emperor Paul, who ruled from 1796 to 1801, inherited the childishness, hysterical and foppish behaviour of his father, Peter III. Mentally Paul went well beyond the capricious irrationality of some Russian rulers; he was almost

certainly certifiably insane. Instead of becoming an inmate of a lunatic asylum he turned his country into one where his subjects went in fear. Whilst his father liked to play with toy soldiers, Paul used his regiments to simulate wooden soldiers on the parade ground. In between these games he found time to play with the administration. He wanted the governors to become once more immediately subservient to himself and therefore restored their viceregal position, reducing the roles of the procuracy and senatorial supervision. He intended to restore the central colleges and strengthen the power of central government.

With the accession of his son Alexander I (1801-1825) we can begin to follow the long cycle of changes in running the country during the 19th century that accompanied the rise of the Tsarist Empire in all its *folies de grandeur*, alternate repression and appeasement occasioned through fears of risings by the peasantry and also of those of the gentry from whom emerged the thinking classes in the 1820s and 30s. The advance of the Russian armies through Germany and into France after 1812-3 exposed officers and soldiers to the views of the French Revolution and of German liberals. Returning home, many of these ideas were developed in discussion groups and secret societies, which hoped for liberal changes but the reactionary and mystical views of the Tsar left them disappointed. It is instructive to trace these movements, especially because they formed the basis of the changes of the early 20th century which influenced the reactions of liberals, reactionaries and Bolsheviks in the turbulent revolutionary period 1905-18. These ideas, events and structures provided the inheritance of the leadership of the Communist Party and set the structures of the Soviet regime which in turn provided the present post-soviet regimes with modes of thought and administrative structure.

Alexander the First was another centraliser; under him the Ministries expanded, gained control of administrations in the *guberniya* as well as of central government. They created their own geographical units, different from the *guberniya*. For example the Ministry of Education had six Divisions and the War Ministry eight military districts. Yel'tsin's MOD has 6, whereas there are 89 subjects of the Russian Federation.

Alexander died in 1825 and was succeeded by Nicholas I, who followed the anti-liberal views of his father. As a result the liberal opposition hardened its views and culminated in the "Decembrists", a group of young officers who plotted to force Nicholas to introduce reforms, but so carelessly that their plans were well known to the police. The proliferation of western liberal ideas through the upper classes frightened the Tsars right up to 1917, just as they had the Duke of Wellington. The Tsars had the power to deny them authority and also, for several decades, higher education other than that of science and technology, which was considered politically harmless.

Yaney contends[11] that throughout Russian history the administrative problem of the centre should be seen primarily as one of a city mentality in dealing with the peasantry. There is some truth in this, but the problem is more one of the automatic assumptions of the "rights" of a whole privileged class regardless of where they lived rather than that of city slickers ignorant of country mores. Despite the formal emancipation of the serfs in 1861, not until 1907 were the peasants entirely freed from their bondage; previously they had been subjects of a system of slavery imposed by the state; they belonged to the state and also to the landowners who had powers of life and death over them and could call upon the local state organs to

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11 Yaney, op cit.

reinforce their will. No amount of monarchist mythology can hide the latent hatred and rebelliousness of the peasantry who formed about 80% of the Russian population in 1914. Jerome Blum's[12] account of rural Russia is more balanced and illuminating.

The peasantry frequently rebelled in despair, as they had done under Pugachev in 1773. Even at the height of the Patriotic War against Napoleon, many saw him as a liberator from serfdom, helped his troops, savaged their owners and looted and burned their houses.[13] During the reign of Nicholas the First they rose many times; from 1830-49 there were 378 uprisings.[14]

Contrary to left-wing propaganda the lot of the lower classes was not in some respects so much worse than in Europe. Blum compares the food consumed by ironsmiths and carpenters' families in the Urals in 1846. These were almost certainly craftsmen employed in military factories. The rations of a seaman in HMS Warrior in 1860 were almost identical with that of a seaman in the Imperial Russian Navy; the main difference was that the latter was issued with vinegar whilst the Royal Navy lower deck had beer.

Table 1: Annual per Capita Food Consumption of Worker Households (kgs)

	Urals Ironsmith (1844)	Urals Carpenter (1844)	Swedish Ironsmith (1845)	English Iron Smelter (1850)	Slovak Gold Smelter (1846)	French Carpenter (1856)
Cereals	289.6	212.7	282.9	107.6	183.9	117.6
Fats	3.14	4.6	14.6	8.4	8.0	3.6
Milk	314.3	263.6	257.1	89.1	165.0	40.0
Cheese	-	-	-	3.4	1.4	1.8
Eggs	6.14	2.9	4.3	0.7	2.9	1.4
Meat & Fish	40.7	37.3	60.0	34.3	27.3	27.6
Vegetables & Fruits	109.1	136.4	105.3	53.3	138.6	59.7
Sweetening & Condiments	8.0	8.3	32.1	24.4	5.0	6.5
Fermented Beverages	2.3	141.4	166.8	150.6	18.9	13.0

12 Blum, op cit.

13 Their example was followed during both the 20th Century World Wars, with local peasantry as well as nationalists in Bessarabia, the Ukraine, Belorussia and the Baltic Republics welcoming the German armies and their allies, until their repressive actions in WW2 turned the locals against them. This is clearly documented by the memoirs of contemporaries, for example in “Rossiya i Napoleon” (lit cit).

14 Encyclopedia Britannica 1955 ed, p698.

Blum gives the following information[15]:

Date	Urban Population	% of Total Population
1724	328,000	3.0
1782	802,000	3.1
1796	1,301,000	4.1
1812	1,653,000	4.4
1835	3,025,000	5.8
1851	3,482,000	7.8

One may compare this with data from Soviet times:

1926	26,300,000	18.0
1939	56,000,000	33.0
1999	120,000,000	around 78.0

And, Blum continues, in 1856 of 678 cities 119 had less than 2,000 inhabitants; 236 had 2,000-5,000; 256 had 5,000-15,000; 57 had 15,000 to 50,000; 7 had 50,000-100,000 and 3 had over 100,000. Blum cautions that the urban figures may be an underestimate since migratory peasants were not included. By 1914, according to Baedeker, the number of cities over 100,000 had risen to 33. In England and Wales, by comparison, 32% of the population lived in cities in 1805 and 50% by 1851. Baedeker 1914 provides a wry comment that was true in the 1950s, 60s and 70s as well as today: "Beggars are very troublesome, especially in the vicinity of churches".

The Structure Of 19th Century Tsarist Administration

The system of transmitting the wishes of the Tsar varied throughout the Empire. Empress Catherine II late in the eighteenth century decreed a rudimentary structure upon which the Russian Empire built when it came to modernity and maturity after the defeat of Napoleon in 1813. In the first half of the century, the Tsar sought to reduce the powers of the governors: the final form of the administration is as follows.

The eastern regions of the Empire, Poland, the Caucasus and Finland were under the jurisdiction of governors-general aided by military governors.

Governments-general, each with their subsidiary governors, covered Poland, with 9 governors, Irkutsk with 4, Kiev with 3, Moscow with one, Amur with 4, the Steppes with 2, Turkestan with 5, Finland with 8.

There were 52 governments that were not embraced by governments-general. These covered the areas of Russia, Belorussia, Bessarabia, and the present Baltic States. These governors acted in practice as Viceroys, with little or no contact with the Ministries in St Petersburg.

The Trans-Caucasus was ruled by a Viceroy, under whom were 13 *Guberniya*, "Governments" ruled by governors.

From time to time in the 19th century the government experimented with establishment of *Zemstvo*, a sort of Rural District Council originally with members

15 Op cit.

drawn exclusively from the nobility. At times the Tsar abolished them, deeming them to be a threat to his autocracy. European Russia, where the *zemstva* were part of the governmental structure, was better administered and better provided with civilian services than the rest of the Empire, except for Finland which enjoyed a special self-governing status. The whole system was designed as a means of transmitting and executing the will of the Tsar. It can be seen, not unjustly, as a predecessor of Lenin's Conveyor Belt. The civilian administration was supported by military governors and garrisons.

The policies of alternate repression and appeasement of the gentry and of the peasantry were reflected in decrees and the administrative structures that they created from time to time. Successive Tsars did not put in place a coherent cabinet government and indeed there was no formal prime minister until 1905. In 1904 King Charles of Romania on a visit to the town of Jassy, asked Prince Urussov how the Russian government operated. Urussov replied that in the Russian absolute monarchy there were as many governments as there were ministers; they did not operate as one government. Each minister reported directly to the Tsar and directed his work irrespective of what happened in other ministries. The cabinet of ministers was purely a nominal body, it never met and played no part in the government of the country.[16] The Tsars played their favourites and one minister against another. A favourite, even when he was in a minority of one, might see his project translated into law by decree of the Tsar. It might, however, be rescinded the following day if another favourite persuaded the Tsar to the contrary.

Under Nicholas I, who believed in strong central government with himself as the supreme Autocrat, the Interior Ministry increased its control over the governors, adding in 1837 a new force of district police which gave the governors for the first time a network directly under their control. At the same time the ministry put the provincial boards directly under the governors. These moves enhanced their viceregal powers, which accorded with the wishes of both the Tsar and the governors, who wished to avoid government by officials and ministers.

Nicholas' new *ukaz* overloaded the governors with duties; in the 1840s they were required to chair 18 boards and committees.[17] Their job was made worse by increased state tutelage through the corporate organisations dominated by the local nobility, who had the right of appeal to the ministries and even to the Tsar. Robbins[18] quotes Sergei Uvarov, later a Minister of Education under Nicholas I, as writing in 1827:

> *"In order to maintain his authority, the governor is compelled either to form a party among the various local powers or to engage in a war with all of them. In the first case, there results in a struggle of subtlety and intrigue, in the second, complete anarchy... A conjunction of happy accidents, upon which a governor cannot always count, is necessary if he is to keep his equilibrium in such a dangerous situation. Truly there is something peculiar in the position of a man who enjoys the title of chief without the corresponding authority and who can wield power only through guile or scandal."*

There seem to be echoes of this observation in Yel'tsin's Russia.

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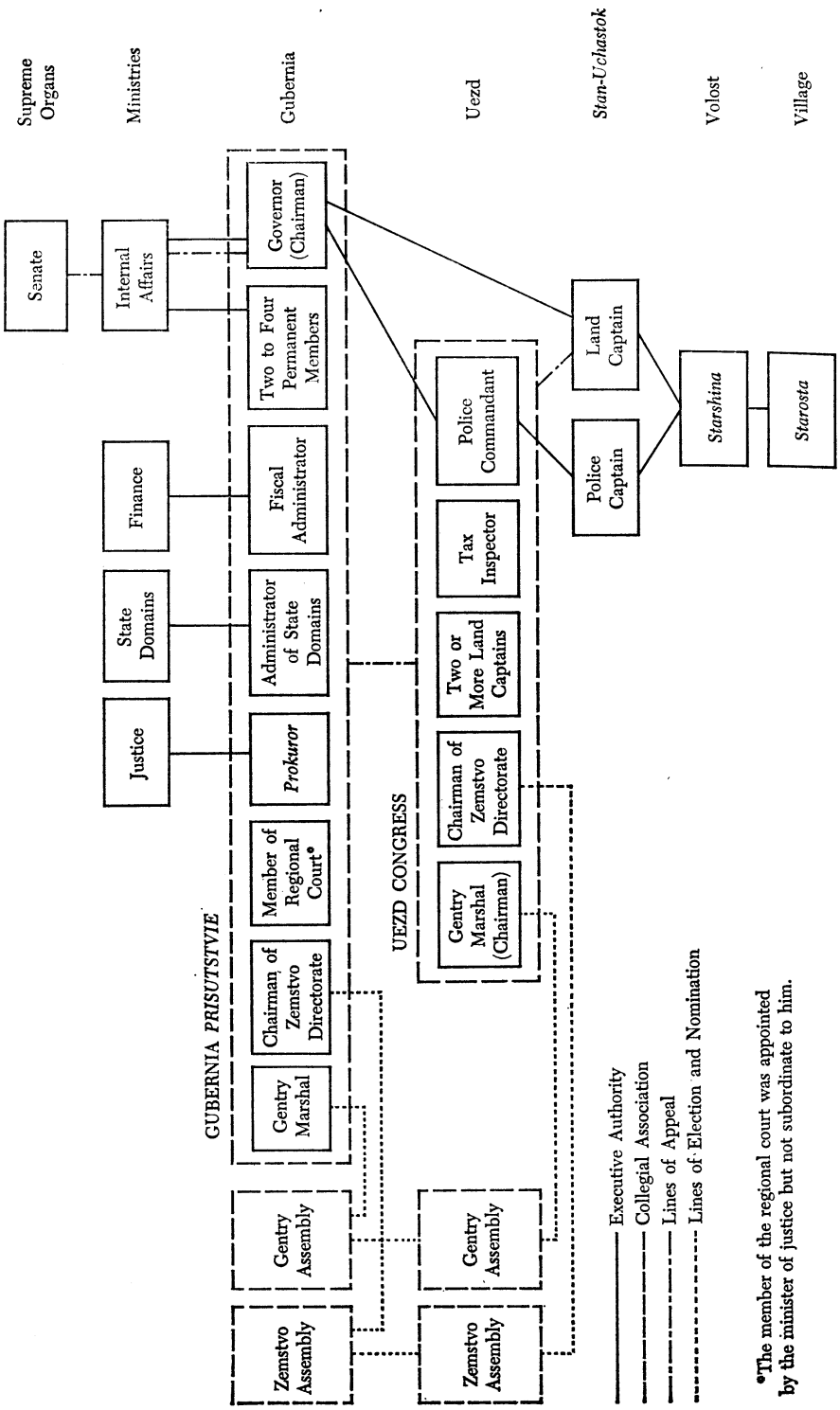
16 Urussov, op cit, p137.

17 Robbins, op cit, Introduction, p14.

18 Ibid.

Figure 2: The structure of the *Guberniya* Board between 1889-1905



Source: Yaney, op cit, p326.

Map 2: European Russia in 1900: Provinces with zemstvos

Source: Yaney, op cit.

The defeat of Russia in the Crimean War convinced the Tsar that his regime was on the brink of political collapse; he was determined upon major reforms. The chief of these was the emancipation of the serfs, which he forced the nobility and landed gentry to accept. The defeat also showed the weakness of central and regional administration and accelerated further administrative reforms; these resulted on paper in a return to the viceregal powers of the regional governors. They were accompanied by a restoration of the *zemstvo* in 1864 in European Russia, which were given the administrative roles of the governors; the *uyezd* was given no reinforcement of its structure. Consequently local adminstration was unequal to its tasks. This became clear to the government, who in 1866 tried to restore the

powers of the governors, especially in the field of law and order following an attempt on the life of the Tsar. Local officials were placed firmly under the control of the governors. During this period, the St Petersburg Ministries created more local committees who increased the amount of government business, with which the understaffed, poorly educated and trained officials were incapable of coping. Robbins correctly concludes that by the beginning of the 20th century, the people lost all trust in the officials and increasingly turned to the governor, as the Tsar's representative, to sort out their troubles. Whilst he remained a "charismatic figure" he became ever more immersed in detail and therefore the more ineffective in practice, a not untypical situation anywhere, but tragically the norm in Russian political affairs, where delegation is as yet an unknown art.

1905-1917

The failure to provide a civilised future for the peasantry forced Tsar Nicholas II to concede a form of parliament whilst retaining the powers of autocracy. Count Witte, probably one of the most liberal and intelligent ministers in Russia, became Prime Minister but was powerless to prevent the Duma raising issues of agricultural and social reform. There is no point in analysing any administrative arrangements for this period, which was dominated by social unrest, armed repression, illiberal acts by the Tsar and some reactionary ministers. The regime entered the world war and perished with it.

Soviet Times

The Centrifugal Consequences Of The 1914-18 Wars

The collapse of the Tsarist and "liberal-democrat" governments through 1917 brought to power an initial coalition of socialists which was rapidly reduced to the dictatorship of the Bolshevik wing of the Communist Party. The repressive, bureaucratic and uncoordinated system of the Provisional Government and that during the first years of Bolshevik rule by Lenin were helpful to the Bolsheviks, many of whose party activists assumed that Party democracy gave them freedom of expression, the right to run their own affairs in the various national republics and regions more or less independently from the central leadership of the Communist Party. After the death of Lenin, they were to receive their reward, either in the grave or in prison, for their optimism that the revolution would provide a Russia very different from that of the Tsar. Poland, Finland, Latvia, Lithuania and Estonia achieved independence; Poland took by force some territory from Lithuania, Belorussia and Ukraine. Ukrainian, Armenian and Georgian nationalists all expected that the new socialist Russian government would be sympathetic to their aspirations for national identity and independence. The Eastern and Siberian provinces of Russia were scenes of civil wars between the new Bolshevik power and local right-wing groups with varying political ideas. These local warlords were driven by their own fantasies of conquering the Bolsheviks and establishing themselves in power regardless of any aspirations of the indigenous populations.

Such was the inheritance of the new Bolshevik regime as it came to power in 1918. It inherited 59 *guberniya* in European Russia and 1 territory. In 1926 the rural population was 82% of the population; in 1939 67%.

In the first attempt at regional planning, GoELRO, the State electricity generating and distribution organisation, in 1920 set up 8 economic regions: North, Central-industrial, Southern, Volga, Urals, Western Siberia, the Caucasus and Turkestan.[19]

The Formation Of The USSR

Lenin forced Trotsky to accept the stiffened terms offered by Germany at Brest-Litovsk following the rejection of the original terms by the Bolshevik negotiators. As a result Russia lost territories in Poland, Ukraine, Belorussia and the Baltic regions. They also had to face the national aspirations of the left-wing nationalists in the Ukraine and in the Caucasus, who negotiated with the Russian Communist Party (CP) and signed treaties and charters giving them autonomous status within a new Federation. The Ukrainians and Georgians set up their own Foreign Ministries with representatives abroad, separate from the Russians, and the Ukrainians had their own army. Lenin counselled the Russian Communist leaders to accept the nationalists as brothers in the new socialist Federation. But the party appointed Stalin to sort out the "nationality questions" and to deal with the Ukraine and the Caucasus. He abrogated the negotiated treaties and charters; his local military chief Ordzhonikidze suppressed with considerable force and brutality the resistance to these measures. At this time, 1923, Lenin was too ill to oppose Stalin's policies for dealing with the nations of the new Federation, which in 1923 became the Union of Soviet Socialist Republics.

The Soviet Union came formally into being in 1923 as a union of four Republics: the Russian, Ukrainian, Belorussian and the Trans-Caucasian Federated Republics. From a position of near equality the CPs of the latter found themselves as subsidiaries of the CP of the RSFSR. The Russian CP became the CP of the USSR and in fact there was no CP of the Russian Federation from 1923 to 1991. (This had an amusing twist after 1991, when it was decreed that all political parties had to be registered. The CP of the Russian Federation, having never been registered as such, since it had been the only Party of the now defunct USSR, was therefore formally illegal.)

The Bolshevik leadership of the Russian Party came from two basic sources. The first were underground activists who had mostly been exiled to a relatively easy life in Siberia. It was easy for them to correspond with their colleagues and even to escape. Stalin was one of them. They were, so to speak, the foot soldiers of the CP. The other wing was composed of the fully or partly educated scribblers who lived the normal life of the politically passionate, left-wing propagandists, writing, talking, holding meetings with others and above all arguing for their particular "line". As a result the liberal-socialist opposition to the Tsar had been split into factions. In 1917 there were 9 Liberal (ie from the Communist standpoint, bourgeois) Parties with a combined membership of less than 200,000. There were 23 separate socialist parties, most of which represented ultra-left views, such as the anarchists, but the largest membership belonged to those of the ethnic minorities of the Empire. Their combined strength did not exceed 230,000. The Social Revolutionaries with 500,000 members was the largest. The Social Democratic Workers Party, as the Communists were known, came next. The Communists held to a Marxist approach, but split into the Mensheviks - the minority - with about 200,000 members, whose views were those of socialist do-gooders, who believed in democracy and shrank from ruthless actions to achieve their ends. The Bolsheviks - the majority with around 350,000 - were ruthless, self-disciplined, absorbed the Marxist tenet that socialism was to be achieved only by the working classes of

[19] Baykov, Soviet Economic System, p428/9. NIESR. CUP 1946.

peasants - who formed over 80% of the Russian population in 1914 - but whose vanguard was the industrial working class.

Stalin was one of these; he came from a poor Georgian family, sent by his mother to a seminary where he absorbed enough of the theological methods of debate to outwit opponents who were imbued with passion but little understanding of argument. He was cunning and wily rather than clever, knew that the road to power lay in putting like minded people into the positions of power and control in the Party apparatus. As he said, "Cadres decide everything". He also knew how to bide his time and to seize the moment to achieve his ends. Lenin, who was educated in politics at Kazan University but had spent most of his adult life abroad, was unable to dispense with Stalin, although he saw through him, distrusted him and opposed many of his policies, especially on the question of the non-Russian nationalities.

The regional Communist Parties wanted a considerable degree of autonomy from the Centre to run local affairs; Stalin offered them a formal degree of autonomy. It turned out, however, that the issue was fudged. Stalin's interpretation of autonomy provided for regional, district, local, even village and factory, Party organisations. There were meetings of these "cells" which discussed and voted on resolutions. It all looked like devolved Party democracy, but it turned out differently. They were all subservient to the Central Committee and later to the Politburo of the Party.

Before the October Revolution of 1917 the Left had called for elections of National and regional Soviets - in English "Councils". Indeed, they had been formed by the Left during the time of the 1919 Provisional Government, with the name of Soviets of workers, peasants and soldiers. The most important was that in Petrograd, the then capital, where the Bolsheviks soon vanquished their main enemies, the Social Revolutionaries and Mensheviks. The Soviets, at every level from the All-Union down to the village, rapidly faded from power, the CP from the Central Committee downwards providing the main organs of State authority. (The Soviets were revived by Stalin much later as a showcase of democracy. Gorbachev attempted to bypass the CP by re-invigorating the Soviets, but failed. Yel'tsin has a federal Soviet as an upper chamber of Parliament. This has become important as the voice of the regional Governors.)

In practice the key positions of the Republican, Regional and City Parties were held by people, nearly always Russians, who were appointed and sent by the Moscow Party. Their job was to ensure that the Party line decided by the Central Party organs was accepted with as little dissent as possible and then carried out. As Lenin said, "The echelon of Party organs provided a conveyor belt for the transmission of orders." It functioned one way only - downward. The way was now clear for the USSR to become a monolith, governed from the Centre according to Marxist-Stalinist dogma, which regarded all ethnic aspirations as contrary to the principles of the class struggle waged by the CP at the head of all the working peoples, regardless of nationality. All the peoples were to regard themselves as Soviet. Over the decades of their rule, the leaders of the Communist Party of the Soviet Union (bolsheviks), to give it its full title, claimed to be bringing about a New Civilisation and new Man - Soviet Man. That icon was to take the place of any ethnic or national pride or aspiration, except perhaps in the exercise of folklore, which was carefully regulated to avoid any divisive tendencies.

The Administrative & Regional Structure Of The USSR

The administrative structure of the new regime seems to have been taken over from the Tsarist system; republics took over the role of governments-general where they existed and new republics were added in other localities. The "*guberniya*" were renamed "*Oblast*s", regions. The geographical boundaries of the Tsarist *guberniya* seem to have been followed, to judge by their names and those of their sub-units, by the republics and regions of the USSR.

The RSFSR was by far and away the largest in space and population. Between 1922 and 1937 it contained 18 autonomous republics with national titles of the main people ostensibly forming the population. Some of these republics embraced autonomous districts. In reality, the population was very mixed ethnically and the leading positions were occupied mainly by Russians. The district boundaries were arbitrary and had little or no regard to national distribution. To some degree, this was also true for the boundaries of the main national republics. For example Khrushchev when he was General Secretary of the USSR CP transferred the Crimea from the Russian to the Ukrainian Republic. This issue is still a subject for acrimonious argument between the now independent Ukraine and Russia. The boundaries between Russia and the Baltic Republics, occupied by the USSR in 1939 and which became once again independent in 1991, were never properly delineated in Soviet times. Boundary commissions are now settling the frontiers in the required detail. The "national" republics comprised the Belorussian, Ukrainian and Trans-Caucasian Federal Republics. The latter was split in 1936 into its national constituents - Armenian, Georgian and Azerbaijan Republics.

Additionally there were two small areas which entered into a relationship with the RSFSR between 1922-24. These were the Khoremskiy and Bokharan Republics which were later absorbed into Kazakh and Uzbek Republics. Five more republics were set up between 1922-24, the Turkmen, Tajik, Uzbek, Kazakh and Kirghiz Republics. Some "autonomous districts" were set up within these republics.

To complete the picture: as the result of the second world war, the USSR re-occupied the eastern half of Poland which had been within the Tsarist Empire; the German exclave of Konigsberg, renamed Kaliningrad; part of Bessarabia was returned to Ukraine and the frontiers of Belorussia and the Baltic states were readjusted in their favour from the 1939 frontiers with Poland.

The System Of Government Of The "National" Republics

The populations of these republics were predominantly those of the ethnic name of the republic, which, however, was ruled by its CP where the top posts were held by Russians. In any case, as we have pointed out above, it was mainly constrained to carry out the orders of the Central Committee of the CP of the Soviet Union, to whom all important issues and recommendations of the local parties had to be referred. For example, when Gorbachev, in spite of his degree from an Agriculture College, was First Secretary of the Krasnodar *Oblast* Committee, he had to refer a recommendation to change the system of rotating crops to Brezhnev, then the General Secretary in Moscow. He, not being an agriculturalist, presumably referred it to the agricultural committee of the Central Committee.

The administrative structure is shown below:

* Republican CP Committees (except for the RSFSR, which did not have one but was run directly by the CP of the USSR)
    * *Oblast* (Regional) CP Committees

* *Rayon* CP committees
* Rural and City CP Committees
* Subsidiary committees for parts of towns, factories, apartment blocks, universities etc.

It is the *oblast*s that mainly concern this paper, since they were not only the inheritors of the tsarist *guberniya* but also the predecessors of the post-Soviet regions. In the later soviet period the *oblast*s, of which there were five types, were grouped into eleven loose organisations for planning purposes.[20]

The Great Soviet Encyclopedia[21] lists the Soviet regions, of which there were several types, together with the autonomous regions, districts and subsidiary republics. The entry states that the Soviets took over the old Tsarist structure, but from time to time altered their boundaries and added new ones to correspond with the industrial and economic development of the country.

It must be borne in mind that Soviet administration had three parallel but interlocking chains of command which worked at every level from the top to the bottom.

Level	**Ministry**	**Soviet**	**Party**
All Union	Yes	Supreme Soviet	Politburo/Central Committee & Sectoral Committees
Republic	Yes	S of the Republic	Organisational/Executive Committees
Oblast	Representative Committee	Yes	Ditto
Krai	Representative Committee	Yes	Ditto
City	Representative Committee	Yes	Ditto
Borough	-	Yes	Ditto
Factory/University etc	-	No	Party Cell
Village	-	Delegates elected to Higher Soviets	Party Cell
Farm	-	Ditto	Party Cell

Notes
1. All appointments to ministries and lower organs were party appointments or nomination. There was usually a single candidate for all elected posts.
2. All instructions flowed vertically downward but always with cross-reference to local party organs.
3. All decisions at lower levels were merely recommendations and had to be approved higher up.[22]

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[20] See Map 1.3, p8, and Table 1.1, p6 from Bradshaw & Palacin "An atlas of the economic performance of Russia's regions".

[21] 1974 edition, p185-190.

[22] I was shown the organogram of the Central Committee (CC) and told that when START-2 was being negotiated the defence committee of the CC, with 7 ministers, sat in continuous session every night to read the telegrams, discuss the next move and come to a decision, invariably unanimous, for return transmission to the delegation. It must have been tiring for those top chaps.

4. The intention of the early Bolsheviks was for the Soviets to act as democratic bodies where the will of the people should be expressed and prevail. This was extinguished very soon after the revolution. The Soviets of the Stalin era onward were merely rubber stamps for Party resolutions. Elections to them were treated as an honour for the best milkmaid or factory sweeper, who had the opportunity to visit a regional or even the USSR capital city, sightseeing with all expenses paid and obligatory sessions of formal speeches to sit through.
5. The term Soviet is a generic term for Council; now however it carries entirely different connotations from the soviets of the Bolsheviks.

The central system of the Soviet government showed a division between the Central Committee (CC) and the Ministries. Hough & Fainsod[23] provide a detailed analysis of the structure and divisions of the CC. Their Table 30 sets out the divisions and the agencies of government that they supervised. In May 1978 there were at least 21 departments, further divided into between 150-175 specialist sections. They were staffed by people who in general had considerable experience of running professional affairs in the field; many of these had been high officials in industry, agriculture, etc before being transferred to high Party work. Plainly the move to the CC was regarded as a promotion. This is not surprising since the evidence suggests that the Central Committee did not directly instruct the ministries what to do but acted as the Cabinet Office, so to speak, of the General Secretary and the Politburo, where the final decisions were taken. If the CC was the "think tank" then the ministries acted as executives carrying out the decisions of the Gen Sec and Politburo, acting on the recommendations of the CC.[24]

Soviet ministers gave themselves many airs, but they seemed to spend their day dealing with detail and with the inevitable *priyem*, the audiences given to all and sundry under their command by factory directors, ministers and doubtless others. This was a continuation of the audiences of the Khans and Tsars alike. That is not to belittle them by any means; they provided a ready method of bringing directly to the attention of a senior executive a grievance or a request. But the process did and still does consume a lot of the time of senior people.

In spite of the authoritarian hierarchy of the command structure there was plenty of room for wheeling and dealing, such as the work of the "fixers" used by factories to wine and dine the directors of the factories supplying parts and materials to them because the proper channels - up through one ministry in Moscow across to another and down again - did not operate effectively. Indeed, the only way to get this formal and inefficient system to work was to arrange matters between individuals within the system.[25] This was true within the Party structures also. These relationships were very clear, especially within the southern, Islamic republics where perhaps it might be thought people remained truer to the bazaar

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[23] Jerry Hough & Merle Fainsod “How the Soviet Union is Governed”, Cambridge Mass, 1979, chapter 11.

[24] This view is supported by Hough & Fainsod and also by personal experience of this author in dealing with ministers of the USSR and in 1999 conversations with the former head of the military department of the Central Committee.

[25] In Tsarist times, Urussov (Ch XII) points to the role of restrictive, inconsistent laws in the provision of illegal sources of income to the police, clerks and the army. Those laws directed, for example, at non-Slav peoples caused them to bribe the authorities simply in order to survive. Similarly he found that the budget for the local police, for example, was less than their actual salaries; the difference plus a healthy addition was provided by the bribes, Urussov called them “tribute”, paid by the Jewish population.

traditions than to more recent Communist Party and Russian-imposed discipline.[26] Hough[27] makes it very clear that any Party secretary in the provinces had to have these personal skills in order to get anything done. Nothing had changed from the situation described by Uvarov in 1827. Hough also notes that in the 1937 purges Stalin removed most of the Obkom secretaries, who were shot.

The Government Of The Russian Federation In The Post-Soviet Era

No external force was needed to bring about the disintegration of the USSR. Those of its constituent republics with nationalist movements on the periphery of the USSR were only too keen to become independent and took the opportunity when it presented itself. Russia reformed itself into a new Russian Federation, retaining most of the territory, the cadres of government, much of the military forces, industry and research but only around half the soviet population. Suddenly, the newly independent republics had to find for themselves the people and systems to run every aspect of political, administrative and economic activity at the higher levels, which had been carried out mainly by Russians. The permeation by Russians of the control systems in ethnically named republics within the RSFSR was almost certainly even more widespread than it had been in the newly independent republics.

The Administration of the President of the Russian Federation (PRF)
The Chancery of the PRF.
Directorate for Protocol of the PRF.
Directorate of the Press Service of the PRF.
Secretariat of the Head of Administration of the PRF.
Apparatus of the Security Council of the Russian Federation.
Chief Directorate of the State Legal Directorate of the PRF.
Chief Control Directorate of the PRF.
Territorial Directorate of the PRF.
Directorate of the PRF for External Affairs.
Directorate of the PRF for Internal Affairs.
Directorate of the PRF for Political Planning.
Personnel Directorate of the PRF.
Directorate of the PRF for State (honours and) Awards.
Directorate of the PRF for Questions of Citizenship.
Directorate of the PRF for the Exercise of Clemency.

[26] I noticed this during an All-Union Congress of Rectors of Technical Universities in Tashkent to which I had been invited in the 1980s. The proceedings were conducted in a manner reminiscent of any country on the southern or eastern shores of the Mediterranean. There was one small difference. The delegate from the Union Ministry of Higher Education in Moscow reported that his Ministry had determined to curtail higher education for women, explaining that it was uneconomic since they left soon after graduation to get married and have children. They should be taught home economics, enough culture to bring up their children and sex education in order to satisfy their husbands. This was badly received by all present, especially by the ladies with high posts in research and teaching, degrees in physics and biology and medicine. One asked whether the men should not be taught to satisfy their wives! I was asked what the British reaction would be to such a ministerial proposal. I suggested that it would have evoked marches of women toward Downing Street waving their brassieres and that it would have got short shrift from the Prime Minister, at that time Mrs Thatcher.

[27] Hough & Fainsod, op cit. Interestingly Hough also labelled these people "Soviet Prefects".

Infromation and Documentation Service of the PRF.
Directorate of the PRF for Local Autonomy.
Directorate of the PRF for Coordination of Activities of the Plenipotentiary Representatives of the PRF in the Regions of the RF.
Directorate of the PRF with regard to submissions by the citizenry.
Directorate of the PRF for Relations with Social Affairs and with Culture.
Economic Directorate of the PRF.
Directorate of the PRF for Cossack Affairs.
Organisational Directorate of the PRF.
Domestic Directorate of the PRF.

The Centre

The Russian presidential powers are modelled more closely on those of France rather than USA, but there are significant differences. Yel'tsin's Administration, which has had a change of Head about once every year since 1991, is intended to do the thinking, have the ideas, which the government, with a Prime Minister and various ministries, is supposed to carry out. The President can replace the PM almost at will, and he has. There is also a Duma, the lower house of the federal Parliament and the Federal Council, the upper chamber, a Constitutional Court and other bodies.

According to Chubays, who gave an interview[28] when he was its head, the President's Administration took on many of the roles of the old Central Committee of the CP. These included agitation and propaganda, education, law, cadres, regions, financial and economic affairs. Its main function, according to Chubays and some of his successors, is "accounting and control".

The Regions

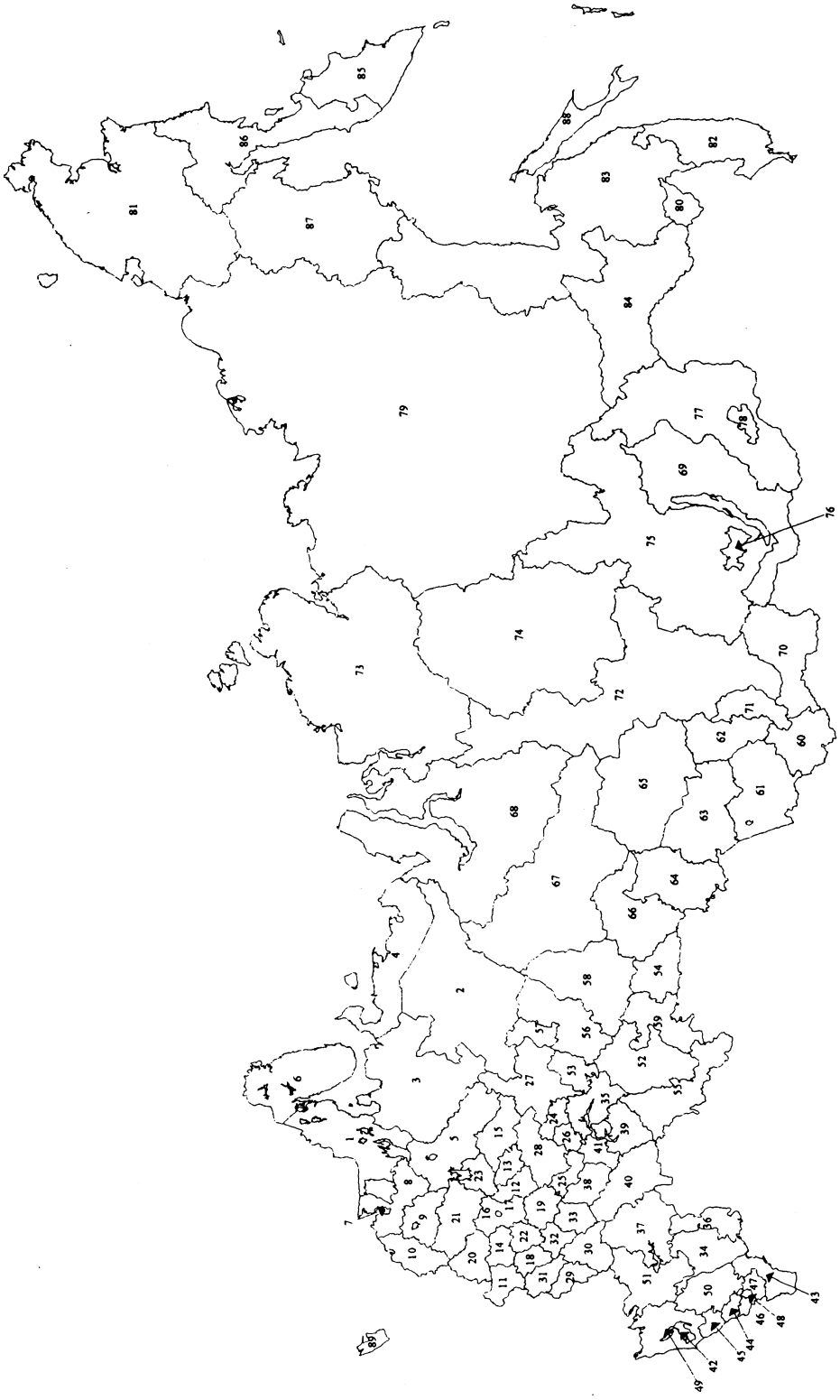
There are 87 regions plus the Cities of Moscow and St Petersburg which are treated as regions, making 89 in all. The present regional structure is a direct inheritor of the Soviet regions, themselves following closely the pattern of Tsarist "Governments". Various loose groupings were formed by governors who perceive a similarity of interests.

Yel'tsin as President, in 1991, initially appointed the governors, in the hope that they would remain loyal place-men to the presidential central administration. This did not last long; to use a term borrowed from the old British Empire, the governors "went native", that is to say they soon not only sympathised with their region's problems but often allied themselves with oligarchs, who became extremely wealthy by organising control of the main industrial and media firms in the regions.

By 1997 the governors of regions and the city mayors were all elected rather than appointed. Plainly control of the local, as well as the national, press, radio and TV together with considerable wealth, gives the political allies, nominees or puppets of the oligarchs considerable advantages in the elections. Since most of the wealth-creating locations lie within towns - agriculture everywhere fails to produce enough food for the population, is loss-making and absorbs heavy subsidies – there are continuous struggles for power between the mayors and governors alongside those between the regions and the centre.

28 Nezavisimaya Gazeta, 10 October 1996, p1.

Map 3: Russia's Regions



Source: Bradshaw et al, op cit.

Key to Russia's Regions

ID		Region
I		**North**
	1	Karelia
	2	Komi
	3	Arkhangelsk
	4	*Nenets*
	5	Vologda
	6	Murmansk
II		**North-western**
	7	St Petersburg
	8	Leningrad
	9	Novgorod
	10	Pskov
III		**Central**
	11	Bryansk
	12	Vladimir
	13	Ivanovo
	14	Kaluga
	15	Kostroma
	16	Moscow
	17	Moscow Oblast
	18	Orel
	19	Ryazan
	20	Smolensk
	21	Tver
	22	Tula
	23	Yaroslavl
IV		**Volga-Vyatka**
	24	Mary-El
	25	Mordova
	26	Chuvash
	27	Kirov
	28	Nizhniy Novgorod
V		**Central Black Earth**
	29	Belgorod
	30	Voronezh
	31	Kursk
	32	Lipetsk
	33	Tambov
VI		**Volga**
	34	Kalmykia
	35	Tatarstan
	36	Astrakhan
	37	Volgograd
	38	Penza
	39	Samara
	40	Saratov
	41	Ulyanovsk
VII		**North Caucasus**
	42	Adygeya
	43	Dagestan
	44	Kabardino-Balkar
	45	Karachevo-Cherkess
	46	North Ossetia
	47	Chechnya
	48	Ingushetia
	49	Krasnodar
	50	Stavropol
	51	Rostov
VIII		**Urals**
	52	Bashkortostan
	53	Udmurt
	54	Kurgan
	55	Orenburg
	56	Perm
	57	*Komi-Permyak*
	58	Sverdlovsk
	59	Chelyabinsk
IX		**West Siberia**
	60	Altay Republic
	61	Altay Kray
	62	Kemerovo
	63	Novosibirsk
	64	Omsk
	65	Tomsk
	66	Tyumen
	67	*Khanty-Mansy*
	68	*Yamal-Nenets*
X		**East Siberia**
	69	Buryatia
	70	Tuva
	71	Khakasia
	72	Krasnoyarsk
	73	*Taimyr*
	74	*Evenk*
	75	Irkutsk
	76	*Ust-Orda Buryat*
	77	Chita
	78	*Aginsk Buryat*
XI		**Far East**
	79	Sakha
	80	Jewish
	81	Chukchi
	82	Primorsky
	83	Khabarovsk
	84	Amur
	85	Kamchatka
	86	*Koriak*
	87	Magadan
	88	Sakhalin
	89	Kaliningrad

The relative wealth or poverty of the regions depends largely upon their climatic, geographic conditions as well as upon their access to efficient transport and their natural resources. The idiosyncracy of the soviet planning system distorted the natural growth of the regions and handicapped their development in postsoviet conditions. One of those factors in particular works against regional separatism, namely the over-concentration of industry in some cities and regions and its specialisation in far-flung locations.

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The Tsarist & Soviet Economies

Manufactures Before Peter The Great (1682-1725)

When Peter ascended the throne in 1682 at the age of 10, western Europe had a well-developed system of commerce and manufacture. This was based on the medieval guilds which strictly regulated the entry into the crafts and supervised the apprentices who were allowed only after many years to practise as journeymen. These tradesmen were skilled in their craft and were fully capable of making goods, especially for personal use, to order. Wealthy and important patrons, many of whom had travelled extensively in Europe and had therefore been exposed to the high standards of French and Italian craftsmen especially, were exacting customers and ensured the high quality of workmanship. The Dutch Wars under Cromwell ensured the access of English merchants to a wide range of raw materials from all over the world, especially the East and to lucrative markets in the Colonies, especially India. In France the reforms of Colbert had already put the educational system onto a sound lay footing, from which shortly afterwards the first of the Grandes Ecoles were to come. These educated engineers to high standards with two objectives which no other country copied for over 100 years, namely to improve the defence of the realm and also its commerce. The Italian and German-speaking States as well as Spain, Portugal and the Low Countries shared in the advance of manufacture and traded freely with each other - wars permitting - thus allowing the rapid equalisation of the standards of artefacts. These countries could be said to be well beyond the feudal condition, well on the high road to a cultured, civilised existence (give or take a few wars, indifference from the upper classes to the exploitation of their people which produced the French revolution in 1789 for example, etc) with an emerging private and state owned and regulated manufacturing industry. They were well advanced in natural sciences as well as applied technology.

In Russia things were very different. Peter found himself ruling a half-wild barbarous realm, hardly emerging from its disparate origins, quarrelling and suspicious Boyars (cf English Barons), from ascendancy of superior political and military forces of Scandinavian, Tatar, Lithuanian and Teutonic powers which occupied much of the country which he and the Russian Boyars felt to be theirs. The political and cultural life of the Court therefore was well behind that of western monarchs. There was hardly any literature, art, or music except that centred around the church. Many of the “nobility” as well as the broad masses of peasants, were illiterate. However as foreign observers even as far back as the 16th and l7th century noted, Muscovites excelled in buying and selling.

The first manufactures were produced by country people working in their huts. These goods would be those required by themselves and people like them, everyday simple things in wood, textiles and iron. If raw materials were not available locally they were sold to the people by itinerant traders who also bought their produce and re-sold it elsewhere in towns and villages. The absence of direct contact with the ultimate user brought about by selling to a middle man who sold onward in local markets, produced an indifference to quality and attention to detail. This set a lower standard of handwork than that of contemporary western Europe. These craftsmen might be regarded as forming what we would call cottage industries; people were fundamentally attached to the land and would leave handwork for agriculture when needed or when it suited them. Some of the work was

concentrated in certain areas either because of availability of local raw materials or because of good river communications to them or to market centres. Some places specialised, for example Tula made samovars. Here the work was farmed out to a group of people each working in turn on one operation until a complete article emerged, hence *Kustar,* meaning a group of people organised like a bush around a centre, which presumably meant a central point for the trader to deliver, collect, bargain and pay out. Probably the people themselves rather than the traders organised the work. (NB This system still pertains in Japan today (1990) as I saw myself. "Daughter" companies of big firms like Toyota have buyers who act in this way and place orders with clusters of independent self-employed workers.) Their basic indifference to such work, combined with the inevitable exploitation of cottage workers, their lack of education but above all their fundamental attachment to the land made them very unwilling to be organised into any factory methods of production.

The Turning Point Toward Modernisation

Peter the Great determined to modernise Russia; his motives for industrialising it were to recapture by war from the Swedes and their Lithuanian allies in particular the western provinces regarded by many of the boyars as legitimately Russian. He also recovered Russian territories in the south by warring against the Turks. He well understood the constraints imposed by conditions of the realm he inherited. He sought to overcome them in several ways of which the chief were:

a) to invite and encourage foreigners with manufacturing expertise to set up factories. These were immune from all import duties and taxation on imported raw materials, components and machinery; they were also entitled to employ conscript labour.

b) to overcome the unwillingness of peasant labour by conscripting many classes to their employers. These included criminals, beggars, children in foundling hospitals, tramps, even wives of serving soldiers. Peter later on laid the foundation of formal serfdom which bound all peasants to their masters. A peasant on the Palace land, regarded by custom as that of the Moscow district, had been bound in practice from the 16th century but could buy himself the right to go away. But he was required to pay land tax and if he could not, forfeited such rights as he had and returned to the ancient serfdom of "Krepostj" which Peter legalised again. Their ignorance and bondage made for very inefficient and indifferent performance.

Professor Kluchevskiy in his lectures on Peter the Great observed: "*With the establishment of the right of the landlord to take the peasant into personal bondage the Russian State entered upon a road which under the cover of external order and even welfare, led to the disorganisation of national powers, being followed, as it was, by the general lowering of national life and from time to time by profound disturbances.*"

c) to develop State manufacturies using foreign experts, conscript labour, with the State the main purchaser especially for the armies, which were nevertheless under- and ill-equipped. Soldiers often faced the enemy without muskets (cf Russian armies in 1914). These factories sometimes failed, to be rescued by State funds and sold to private owners, but still with the State as regulator and often enough the main if not the only customer.

d) to found schools of all sorts, trade and general secondary schools. He thought only from the top down and these schools foundered because of the absence of people sufficiently prepared to enter them either as students or as teachers. In 1714 he decreed that laymen, the children of the "serving" classes, ie gentry, should be compulsorily educated in order to be able to serve the State better. They were supposed to learn, between the age of 10-15, arithmetic, the elements of geometry, geography and religious knowledge. But he forbade further education on the grounds that it would be dangerous - a view reiterated 150 years later by other Tsars. In any event the gentry mostly thought education was a useless burden.

e) to open the ranks of the landed gentry to lower classes; upon their country estates they were encouraged to set up local manufactures, also with serf and later heavily underpaid labour. The new classes also aspired to become gentrified and to take their place in the Table of Ranks and become Court bureaucrats and occupy sinecures previously reserved for the nobility. These ruling classes were even more separated from the real life of the people and of the country than in bourgeois countries. The nobility, which in its assembly (*sobor*) of 1611, had declared itself to be the whole nation, indifferent to the masses, was totally incapable of assuming the responsibility for Peter's reforms. Educationally it was far too backward to cope with administration of the nation which was emerging into a "modern" pattern. But there was no alternative. Peter encouraged them to sample the life of western Europe which they would have liked to graft upon backward, peasant Russia but the gentry lacked the depth of understanding and knowledge to do so.

f) to form a regular army in which all classes served. Although serfs formed most of the rank and file they no longer did so as part of the duty of their landlords (cf England in the middle ages). This process of developing a regular army took over 150 years and has been held by many historians to have contributed significantly to the overthrow of serfdom in 1861-7 (cf abolition of slavery in America in 1865.)

Peter was vigorous enough to drive his people to make cloth and arms from the iron mines of the Urals and South Russia but his weak immediate successors were not. Whereas he was ultimately successful in his territorial and military ambitions, his reforms set the scene for the future backwardness of Russian industry which is still visible. The State assumed the control of everything, it was overburdened and incapable of discharging its responsibilities and its deficiencies became notorious to all but the bigots who accepted the Divine Right of the Romanovs and then the Bolsheviks to autocratic rule.

The state of Russia in the 17th and 18th centuries, observed Vinogradov in *Cambridge Modern History,* had a close parallel with the decline of the Roman Empire of the second and third centuries.

The productive capacity of Russia was sufficient to sustain the local needs of the peasantry who made most of what they needed until late into the 19th century and also a defensive posture, but was unable to sustain the military expansionist pretensions of Peter's successors. Private serfdom remained until 1861 and that on State - personal to the Monarch - properties until 1867; successive Tsars gave more privileges to the gentry and loaded further burdens upon the peasantry, amongst whom were the manufacturing workers. The effects of serfdom were felt right to the outbreak of the first world war. Freedom was bought, by decree of the State, by

payment from the serf to the former owner. The gentry and State loaned the price of freedom to the freed serfs, who were crippled by long term debt. The gentry could live on the subventions from the State paid to compensate for the loss of their serfs and therefore were not motivated to become competent farmers or owners of their estate or village factories.

The gentry, as was also the case in England, despised trade and industry and resisted Peter's drive toward technical education. But this prejudice was not as deep-seated nor as long-lasting as in England; they were soon induced by privileges to enter the world of commerce and indeed some of the highest in the land embraced it with zest and profit. There had been strong merchant families and indeed some like the Stroganovs enriched themselves by owning salt production as well as dealing in furs. In 1699 Peter decreed that merchants should form companies and organise themselves into merchant councils; later he formed the Manufacturing Collegium with the aim of developing industry.

Under Peter the first large factories were created with forced labour. The owners looked to subsidies and privileges for their profit, not economic management; so neither capitalist nor labour had any interest in competent production. Failing firms came under state control and private enterprise on the western model was not fostered. Peter made the error of many successful, powerful and energetic autocrats; he tried to direct everything himself and failed. Nevertheless development at least in quantity there certainly was. For example mineral extraction, smelting and production of guns under the control of a senior General expanded to the point where production in the first quarter of the 18th century exceeded that of England. There were many state monopolies including the manufacture of many raw materials, foods including salt and rhubarb, glue, chalk, tar, playing cards (cf 19th and 20th century France) tobacco, vodka, fish, oil and oak coffins! The State raised prices to generate income, especially for war. It was found in 1725 after his death that the real expenditure on Peter's war effort was over twice that disclosed in the official budget for the previous year (cf pre and post Gorbachev defence budgets).

It did not take long for tax burdens to bankrupt peasants and to stop all increases in performance from serfs, subject to the "soul" or "poll" tax. Public offices were corrupted on a large scale; it was calculated that less than 30% of all taxes raised went into the Treasury.

Peter laid the foundations for modernising Russia, the benefits were to be long delayed but they were paid for by the people then living; no public debt existed at his death. One might compare his work with that of Stalin, whose forced industrialisation of heavy industry always led to *"pay now, earn later - if ever"*, to arbitrary terror, punishment and exile and the destruction of agriculture. Stalin also imitated Peter in using millions of people to do forced labour in basic industries especially in the hard conditions of the Siberian North. In no small way the defects of Peter and of his contemporary society have continued to handicap Russia and were mirrored in Bolshevik theory and practice.

After Peter

There was little of note in industrial development until the middle of the nineteenth century. The estates of the gentry with serf labour were self sufficient; they required little that they could not make themselves and therefore there was little

demand for manufactures. But village industries and also mineral exploitation continued to develop, as did import of foreign goods, capital and expertise in merchanting and manufacture. Forced labour, riots and repressions continued. Central and regional administration was organised and reorganised, state factories and mines with their serfs were handed over to favourites of the Court. State policy vacillated from utmost severity to reduction of some of the privileges granted to owners but generally supported them, often with Cossacks.

Nevertheless the growth of factories was rapid under the Empress Catherine II; they grew from under 1,000 to over 3,000 in a few years. This was accompanied by the formation of groups of skilled workers who were no longer serfs. Many of these learned a trade from foreign foremen and in newly established technical schools, established at the end of the 18th century. A high proportion of these works were devoted to textiles, still for the army. Wealthy townspeople preferred imported cloth and the country folk made their own.

The Rise Of The Factory System

This was developed from the factories on private estates and independent ones which were often former state owned factories and which might still be regulated by the State. Not until the Emancipation in 1861 could it be said that factories resembled those of contemporary western capitalism. The estate factories could be very large with thousands of employees, all housed locally with their own plots for cultivation. Their produce was still based on textiles, initially flax, later from cheap, imported largely English cotton, leather and manufacture of simple metal products. The rise of these factories was motivated significantly by falls in agricultural prices in the 1820s and 1830s. The cottage industries still survived and competed with the local factories in handicraft products. But commercial imperatives impelled the Russian cotton manufacturing industry to be concentrated, as in Lancashire, in large mills. They used hand looms and many mills were uneconomical; one reason being that the English were forbidden by law to export textile machinery; this statute was not repealed until 1859.

Russian mills were protected by tariff. Thus the early Russian industrial development, as was the English, was primarily that of textile development rather than in general engineering. The drop in world prices of cotton caused the local handicraft linen industry to be displaced by factory made cotton.

Social theorists in Russia were active early in the 18th century. The Populists and Slavophiles held that the *kustar* system was the “natural” road to capitalism for Russia, and that the factory system was “unnatural” (cf William Morris). Romantic dreaming in both cases; the idyll of rural life is shared by Russian Monarchist historians with fairy tale illusions about the Golden Age of the late Tsarist period and also by English nostalgic writers. The Marxists and others such as Count Witte took the other view. By 1840, 60% of all industrial workers were factory-based. But factories spawned satellite *kustar* activities, as we noted above; furthermore many people left or were discharged from failing factories and set up as craftsmen in villages.

From The Second Half Of The Nineteenth Century To 1917

Engineering education came late to Russia, as it did in England; successive Tsars were suspicious of higher education for the newly emerging middle classes and gentry. It was thought that they would learn to be revolutionaries. But the Kiev Polytechnic Institute was sanctioned and followed by others in Moscow and Petersburg. University degrees in engineering became available only toward the last quarter of the 19th century in both countries, whereas in France engineers were educated to high standards by 1720; indeed Peter invited some of the best French engineers to St Petersburg to teach but the engineering schools did not really take root due to the lack of sufficiently educated entrants. In the 18th century France educated engineers with the twin aims of improving the defence of the realm and increasing its commerce; the Germans followed in the 1830s for the same reason of supporting the army.

The English saw the need for neither since they had the Channel as defence and a captive market in their colonies. In England, engineering was primarily a means of improving the textile trade and of transport by rail and ship, only later did it develop into general engineering. It was soon overtaken in ingenuity, quality and volume by the French and Germans, as Lyon Playfair warned the Prince Consort after the Paris Exhibition of 1837 and the Hyde Park one in 1851 (and later by the Americans in the 1870s).

Russian engineering primarily existed to serve the growth of railways which began in the l850s and grew rapidly through to the 1920s. The State had a secondary aim to free the country from dependence on foreign goods, but the lack of decent transport was a primary handicap. Tugan Baranovskiy in his book *"The Russian Factory"* considers the railways to be the most important of all the aids to industrial expansion. But other stimuli such as the huge influx of foreign money and men were essential requirements.

Count Witte, one of the most objective, wise and competent people in Russian administration - a graduate in mathematics - was for years in charge of the railways. He points out in his memoirs (English edition 1922) that their proper development was hindered by useless, unprofitable lines requested for military purposes which, in the outcome, they also served badly. Something like 60% of all Russian iron and steel output in the peak years 1869-71 and 1895-99 went to railway and locomotive engineering. The Putilov works (originally owned by and named for a former serf capitalist) came into existence to produce rails and only later became a heavy, general engineering works; since the revolution it has been called the Red Triangle.

Another factor that affected industrialisation was plainly the Emancipation of the serfs. The iron mines suffered because they no longer had bonded labour and had not adapted to the conditions required by free labour. At about this time there was a financial crisis, begun perhaps by the shortage of American cotton as a result of the Civil War. As a result many American and later English banks and firms failed. This was followed by a considerable influx of foreign capital, entrepreneurs and expertise, which allowed the rapid development of South Russia along the Don, close to the great coal mining area, of iron works and manufactures; one was English, the Hughes works. The Urals, the Don basin, Baltic Republics and Poland were to flourish as the main industrial centres of Russian Empire. All apart from the first were largely lost to Russian production in both the German wars 1914-18 and 1941-45; these amounted to 60% of all industrial productive capacity. During

the interwar years, the Baltic Republics were independent. Finland was fortunate in both wars in that it largely escaped the destruction of war; this fact, added to the vigour of a small, independent, hardy Scandinavian people, undoubtedly allowed Finland to achieve a far higher standard of living than the other areas of the former Russian Empire.

Textiles blossomed in these areas; a German immigrant, Knoop, with Manchester connections was instrumental in, and ultimately controlled, practically the whole cotton industry in Russia. Foreign capital dominated commerce even before it did so in manufacturing. Most of the manufacturing was in the hands of French, Belgian, German, English and American capitalists. Even when the legal ownership was Russian or Jewish the actual management was frequently foreign, especially where expertise was required.

Pre-revolutionary Russian analysts such as Tugan Baranovskiy (who interestingly enough was at one time a Marxist) concluded that protective tariffs and bans on imports killed local industry, especially where modernisation and expertise were required in order to compete. Apart from railway engineering, Russian metal-using industries were not very well established either in quality or in terms of making a significant contribution to the national economy. It was, however, true that just before the war, between 1911-13, there was a recovery after the disaster of the Japanese war which led to an improvement. Capital invested in engineering trebled and the state was no longer the predominant, if it still remained the largest, customer for the products. Russian capitalists and merchants however still concentrated upon and made huge fortunes from textiles and the food industries. The cooperative movement developed, especially in small scale production; a business-like middle class was in evidence and credit institutions emerged.

However western financial institutions were grafted artificially onto an economy too backward to use them properly. Count Witte claimed that his policy of establishing the gold standard for the ruble stabilised the economy but it put the economy under strain by the need to attract foreign gold and investment, which actually declined just before the war. Furthermore, the policy of modernising the economy through European investment and personnel involved further foreign control and the economy was hard put to repay loans. Examination of the lists of exports and imports of the last decades of the Tsarist Empire demonstrates that it was far from being an industrially developed economy, as some post-revolutionary emigre monarchists would have us believe. It still basically exported raw materials and imported manufactures and goods of far higher complexity and added value than were exported. Russia was not and never had been a world class industrial power, nor would she have been unless the social traditions of the past were firmly rejected by the state and all classes of society. There were no signs of this happening.

Even in the final decade of Tsarism, the state was the main instigator, controller and tutor of industry and due to its incompetence, industry and also the railways into which vast sums had been poured, were not paying propositions. State investment policies would have required decades of steady peaceful expansion in order for the benefits to mature. But the social, political, religious and military aspects of Tsarism led inexorably to war and to the chaos of political dissent, repression of the people, absence of any semblance of democracy. The incompetence of the nobility and the gentrified classes in administering the country, their corruption and venality saw to the alienation of the people from the evolution of industry and agriculture and from the regime. The self-delusions of the military and Court advisers provoked the Japanese to victorious war in 1905 and to the

abortive and failed liberal revolution of the same year. The pathetic incompetence and weakness of Nicholas the Second, the intrigues between the German and Russian ambassadors to each other's country led to the Russians entering the First World War. The result was a perfect recipe for total disaster, which followed.

The war of 1914 demonstrated very cruelly the lack of ability and capacity of the Russian Empire to coalesce to common war aims. The only available ports, Archangel, Murmansk, Vladivostok and Odessa, were inadequate to import essential supplies and the railway system broke down by the end of the first year; their repair workshops were unavailable because they were converted to making munitions. Apart from the loss of much essential industrial capacity in the territories occupied by the Germans, the direction of the rest deteriorated; the managers of German origin and nationality were removed and their replacements were unaccustomed to the work. Communications and industry could not support and arm a large army in the field, and the civilian population was gradually starved of all essentials. The peasantry gradually withdrew from the war effort and hoarded their produce for their own use. The subject, minority peoples felt little need to defend a Russia that was no Mother to them; in any event the war was fought on their territories not that of the Russians themselves and the sacrifice was immense. The soldiery were slaughtered, starved and taken prisoner by the million. The army lost about 50% of its total mobilised personnel in killed, wounded, missing and as prisoners before hostilities ended.

No amount of post hoc facto recounting of fairy tales by ci-devant nobility in emigration could hide the deficiencies of the final stages of the Romanov Autocracy. With 60% of its productive capacity lost to German occupation, the industrial machine behind the war effort simply stopped; the Russian armies were beaten in the first year of war and the soldiery were no longer willing to defend a church, a monarchy and a nobility that had not only beaten and exploited them but were plainly incapable of effective command. In 1917 the soldiers voted with their feet, walked away from the Front and went home. They rejected the pathetic illusions of Prince Lvov's and Kerenskiy's Provisional Governments and supported the only party that was disciplined, knew what it wanted and offered the slogan of "Peace, Bread and Land" - the Bolsheviks.

After The Revolution

The Bolsheviks inherited a bankrupt empire. The Communist Party did not invent repression and Terror, although its versions were infinitely more cruel and all-pervasive than was that of the Tsar. It did not invent State ownership of industry and commerce which was already pretty well regulated by the Tsarist State, who still owned much of it and was its chief customer in the shape of nationalised railways and of course the armed forces. The Bolsheviks did not invent centralist ministerial control by administrators and bureaucrats who were driven by theory and dogma, nor did they place in power for the first time people without practical competence or education and training to run factories, distribution and agriculture - the landowning classes, the Tsarist officials were characterised precisely in those terms. Nor were industrial workers demotivated by them to work badly, sloppily "any-how" and to be suspicious of their foremen and managers. Nor did they invent an all-powerful Leader who took and developed semi-mystical powers. **All this existed in Tsarist Russia, even to its end.**

The regime was concerned to end the war with Germany, to repulse the Interventionists, to establish its frontiers and its power within them. Economically it faced huge problems of feeding its soldiers and urban population as well as getting the economy moving again in the first place to arm the soldiers. Peace was not signed with Germany till 1918 and the Intervention and Civil War lasted till 1920.

With the death or emigration of a large proportion of the educated classes, Lenin also faced the rebuilding of the basis of the economy with workers already ill-educated and trained in working well, let alone capable of leading others to perform. There were some patriots, like Georgiy Lomonosov, who stayed for a while. He was the designer of one of the world's most successful locomotives before the revolution; Lenin asked him to take a small group of people abroad and get 1,000 of them built quickly in order to get troops and supplies across the vast territories of European and Siberian Russia as well as to feed the cities and get the economy moving. He did it; the Americans at one time turned out one every ten days - and the story can be read in his archives, now in Leeds University, but he emigrated in 1926, as did many of the remaining Tsarist experts and intelligentsia.

A faction of the Soviet Government envisaged the cooperation of former capitalists by buying them out and encouraging them to manage their factories, but under the general direction of workers' councils. In November 1917 they decided to set up a Supreme Council of the National Economy (SEC) which would "deal with its organisation and state finance and prepare to regulate the economic life of the country". A week later a decree set up workers' control and legalised the unorganised, unofficial and sometimes violent intervention by workers in management of enterprises. From October 1917 to June 1918 of 521 nationalised large factories all but 72 were taken over in this way.[1]

By June 1918, the SEC realised that hasty nationalisation would lead to a decrease of production but, according to Leon Trotskiy, went along with the decree because they could think of no other way out!'[2] In this way all enterprises employing more than 5 workers using mechanical power and more than ten without it were nationalised and "controlled" by the SEC. Many such small firms used raw materials contrary to the instructions of the SEC and made anything that could be bartered locally.

This was a period of reducing output; Gosplan published the following figures:

Output from Industries	**Large**	**Small**	**Total**
1913	100.0	100.0	100.0
1916	116.1	88.2	109.4
1917	74.8	78.4	75.7
1918	33.8	73.5	43.4
1919	14.9	49.0	23.1
1920	12.8	44.1	20.4

[1] Milyutin, V P, History of the Economic Development of the USSR, 1929. Compare the unofficial rush to privatisation, initiated and run by former members of the CP and the Mafia in 1990-92 and the existence of a multi-tiered structure of privatisation committees ranging from the Republican Governments down to what we would call City Boroughs.

[2] Compare the views of some contemporary economic advisers both Western and in Russia.

Product	**1920 output relative to 1913 (%)**
Iron ore	1.6
Pig iron	2.4
Steel	4.0
Cotton manufactures	5.0
Sugar	5.8
"Prime necessities"	13.1
Manufactured consumer goods	12.5

The basis of the central planning system was laid in this period; the SEC set down mandatory norms in terms of physical output which had to be distributed according to a state system of barter. No attempt was made to estimate or control costs, prices, losses or profits of the organisation.

Country Life & Feeding The Population

Serfdom had been abolished in law in 1861 but the freed serfs were still de facto bound to the soil, although they could no longer be bought, sold or given away to pay card debts. They still performed labour for the land-owners; they themselves still could not own land, they were merely allowed the use of some of that which they had worked as serfs and then provided that they paid for it. Payment was to the State over 49 years, the peasant community was responsible for the payment collectively and no one was allowed to leave until he had paid his share. The Stolypin Reforms of 1906, which followed the Peasants' Revolt of 1902-3, had accelerated a slow differentiation into richer and poorer peasants; the latter were basically subsistence farmers. Envy and antagonism grew between those who had shared a common adversity. Peasants hoped for an equitable distribution of land after 1906 but were disappointed; the results were increasing hostility to the estate owners and also to the recognition of over-population in Russia west of the Urals.

The incoming Soviets therefore faced a grim food shortage, a failure of the farms to deliver and inherited, rather than invented, simultaneous financial incentives backed by forced collectives which they were to adopt throughout the 1920s and early 1930s. To these they added their own dogmatic spices: Lenin's view expressed in 1920 that "the individual peasants are the stronghold of capitalist roots in Russia", followed by organisation into large State collective farms. In those years the normal distribution system collapsed entirely and was replaced by private initiatives by townspeople going with bags (*meshochniki*, cf *avoska*) of exchange goods into the country and bartering them for food. According to Lenin they collected more than the State buyers; however this did not stop a flight from the towns nor hunger, famine and widespread deaths. Thousands of orphaned children (*bezprizornii*)[3] roamed the steppes in huge bands, killing and plundering in order to stay alive. Finally they were rounded up and educated in boarding schools.

The collective farms, whether Sovkhoz or Kolkhoz, were not a success; their low productivity was due to the inexperience of "managers", industrial workers and party "intellectuals". The people who went to work on them were also incompetent, they came from the ranks of the poorest peasants, from demobilised soldiers and industrial workers. Both the State and Collective farms had as their priority that of feeding themselves before worrying about sales to the towns. If there was surplus

[3] One of these girls was fortunate enough to leave the country and lived with us in London. The physical effects of that starvation lasted till her death.

food, peasants were unwilling to sell it since money had no purchasing power and in any case there was nothing to buy with it. Consequently the state resorted to wartime methods of enforced collection. According to the official statistics these were - in millions of pood (1 pood = 40 Russian or 36 English avoirdupois (funny how the English use French words!) pounds = 16.38 French, now internationally accepted, kilograms):

1916-17	508.1
1918-19	107.9
1919-20	212.4
1920-21	367.0

Over the period from 1913 to 1921 the gross yield dropped from 3.850 10^6 poods to 1.699 $l0^6$ in 1921. In 1920 the crops failed in the Western regions and millions died in the Volga district.

War Communism - 1919-1922

The Party tried to deal with this critical situation by sharpening their aggressive policies against the richer peasants and other class enemies; this period became known as War Communism since it represented the extreme application of the Marxist-Leninist social theories in a genuine crisis.

Forced grain appropriations were accompanied by repressions, forced labour and confiscation of property and nationalisation of the banking system which was intended as a means of controlling the economy from the centre. Lenin admitted that they could run it without the former bourgeois experts but this cooperation rapidly ceased. The population of the main cities decreased to about half, with people returning to villages as well as being absorbed by the army. This led to shortages of industrial workers and to the conscription of labour in 1920. This was intended to become permanent but was abolished by the NEP. Normal pre-revolutionary trade methods disappeared and primitive barter took its place. Foreign trade also ceased; true, the capitalist world imposed a blockade which was lifted only in January 1920.

These measures failed to stabilise the economy; the State budget went from a deficit in 1917 of 22.6 million roubles to 1,055.6 in 1920 and to 21,936.9 in 1921; the difference was made up by printing money.

The leadership now made another about turn and abandoned its principles, a step which Lenin justified on grounds of expediency'[4]. At the 10th Congress of the CP he frankly stated it allowed a relative return to private trading, especially in food and consumer goods.

[4] The Communists were not alone amongst world leaders in sacrificing principle to expediency from time to time; they were perhaps unique in justifying an about turn by appeals to theory, dogma and principle which they were adept at distorting to suit their convenience.

The New Economic Policy (NEP)

There had always been factions in the leadership; Bukharin, Rykov and others who later became labelled as the Right Opposition, were made to recant in 1928 but were nevertheless shot as counter-revolutionaries, had argued all along for a mixed economy; retention of private property especially of land and the right to own and run small businesses. They concluded that a rapid and violent change from private enterprise to wholesale nationalisation was a path to ruin. Lenin became convinced of the failure of War Communism, accepted the need for a relaxation in order to revive the country. He persuaded the rest of the leadership that there was no alternative and the NEP was decreed in August 1921. Consequently private enterprise and trade became to some degree respectable, if considered with suspicion by the hard-liners. In fact the leadership introduced and tried to manage a return to NEP with the methods of War Communism. The "market" was to be controlled from the Centre. (Compare 1990-92 the desire to control privatisation and conversion of military factories from the Centre.)

True, private enterprise in manufactured goods was limited to small firms. The NEP-man became the bogeyman of communist youth and was treated as an exploiter of the true worker. Consequently, the private sector did not fulfil Lenin's intended role of stimulating the economy; in fact the output of private, as opposed to state and cooperative firms, from 1925 to 1928 dropped from 20% of total production to 12.7%. Lenin's intentions were ambivalent; together with limited relaxation of tight central controls as set out below he stated that State industry could not survive or recover without state subsidies.

Initially State owned industrial enterprises were grouped into trusts, which were intended to become independent, to compete and to earn profits and to use commercial calculations to achieve this. Profits had to be returned to the state but they were allowed to keep 20% as reserve capital, a welfare fund and bonuses. But their prices and allocation of raw materials were fixed from the centre, through union into compulsory syndicates. The planning system was reorganised several times to deal with inefficiencies. This was hardly a return to private enterprise; indeed in 1927 the aim of deriving profit was dropped in favour of "acting on the basis of commercial principles in accordance with planned tasks". Although the director was charged with running the business and with the maintenance of State property entrusted to him under the threat of criminal civil and disciplinary laws, in practice he was under the thumb of the Party cell and local trade unions. In 1928 a law was promulgated with the aim of eliminating this triad of controls and giving the director maximum freedom in accordance with principles of what was called *Khozraschet,* which appeared again in the late 1980s under Gorbachev and was hailed - wrongly - as a step toward Western methods of business accounting with the director as a fully independent chief executive officer. This was an illusion in 1928 as it was under Gorbachev. The Party apparatus saw to that in the 1920s and unmodified Soviet laws in the 1980s although the Party still exerted an influence.

The NEP was supposed to be a recovery period but in fact the quantity of manufactures dropped while their costs of production and prices rose. Manufactured goods were very scarce and were therefore expensive in relation to farm produce. Consequently, the farmers were reluctant to deliver produce to the cities - as was again the case in 1991-92. The disproportion between prices of manufacturers and of agriculture was so great that products were made, stored but not bought and the same was true for food. Lenin called this dilemma "the scissors" with industrial prices rising along the rising open top blade whilst those of

food were dropping along the bottom. It was essential to close the scissors; it was done in six months by selling industrial goods below cost price, removing the paper profits of the trusts and by increasing food prices. This balancing act persisted throughout the Soviet regime and indeed to its heirs today.

Party dogma stated that the poor peasants were the friends and supporters of the proletariat and of the revolution. But poor farmers were subsistence farmers. NEP allowed land to be leased and gave freedom to peasants to hire machinery and even labour to some degree whilst having full freedom to organise production and to sell their produce. This created a wealthier grouping of peasants; the wealthier ones, known as *kulaks*, were regarded as class enemies. Consequently the Party tried to support the poor peasants to encourage the middle class ones whilst holding them back from joining the ranks of Kulaks. In spite of these contrary policies agriculture did improve and in 1925-26 the harvest was quite good. NEP allowed a whole host of small manufacturers, traders and middlemen to flourish and these did make contributions to the economy. However they were viewed with distaste by the Party and by the industrial workers. This became articulated in conflicts between factions of the Central Committee; with Bukharin advocating liberal policies, Trotskiy standing for the hard line and Lenin trying to hold the balance. His death in 1924 and replacement by Stalin led to the expulsion and exile abroad of Trotskiy and to the ultimate execution of Bukharin and the Left Opposition leaders. NEP had furthermore begun again to allow foreign participation in basic industries such as mining in USSR; foreign trade, non-existent till then, began also to pick up but under Stalin conditions for work by foreigners again became intolerable. An example was the infamous Vickers Trial in 1926 when some English engineers building a power station were imprisoned for “industrial sabotage” under trumped up charges.

NEP, which was responsible for an improvement in the elements of the economy, still did nothing to satisfy the peasants’ need for products and their paper roubles’[5] were useless. Consequently they again returned to withholding food from the towns. This provided Stalin with a weapon with which to attack them and to return to the harsh dogmatic methods of repression and central control of the economy and of the life of the people.

The First Five-Year Plan - 1928-32

NEP, along with millions of *kulaks*, died about 1928. Farms were collectivised, millions of people went into exile and forced labour into the beginnings of the “Gulag”. The Terror was reintroduced on a growing scale, the Internal Police, fed by fake denunciations of class enemies, rounded them up. The *kulaks* who were, as we saw above, responsible for the production of much of the surplus food for sale were eliminated. Starvation and famine persisted in cities and countryside alike till the early 1930s. Food rationing, unknown since the Civil War, was reintroduced and abolished only in 1934. The purchasing power of the rouble dropped to a tenth of its value during this period. What mattered was not income but privilege, where a person was allowed to shop, the closer to the top and to the inner ranks of the Party the greater the isolation from reality of the people and the greater the privilege. Thus and then were born the conditions we all know and so well

[5] The 1990s equivalent were called "wooden roubles".

described in Orwell's Animal Farm. They persisted into the early 1990s in the former USSR and indeed in some countries of Central and Eastern Europe'[6].

Stalin's vision was one of centrally planned mechanisation of industry, especially heavy industry, seen as the basis for the defence of the country through the Armed Forces and also collectivised and mechanised farms on a huge scale with labourers working under a managed system. There was an effective return to serfdom with workers attached to their farms and industrial place of work which they could not leave without permission.

At the cost of perhaps 20 million deaths the basis for the industrialisation of the country was laid. But the factories, built partly with the help of German and American engineers, were relative to those in the West, crude, inefficient, wasteful and caused heavy pollution in the surrounding neighbourhood and regions. Visits to them in the 1980s and 1990s shows that they had not evolved, they remain in the conditions in which they were born. Everything was sacrificed to the fulfilment of the Plan at any cost and the Plan was in written terms of crude physical output. Failure to fulfil targets might mean loss of bonuses, jobs and even life itself.

In agriculture there were two types of farms: the so-called Collective farms and the State farms. In the former people were given a small plot of land and living accommodation and allowed to cultivate their own plots and to sell surplus produce in town markets. In the late 1950s it was estimated in the West that one third of all food was grown on these plots which occupied about 1/30th of cultivated land. Both Collective and State farms were run by a committee in which the Party figured largely. The leaders were not necessarily experienced or educated in anything, let alone in farming. The workers in the former were supposed to participate in the profits in money and/or in kind from the collective whereas those working in State farms were wage earners like those in factories. Both were supposed to be serviced with seed, machinery and services by outside bodies such as Machine Tractor Stations. Collective farms appealed more to the Russian countryman since they corresponded more to the *artel* and the *kustar* that preceded them, to which he had been accustomed for centuries.

The Second & Third Five-Year Plans - 1933-37, 1938-42

These were the years of Stalin's increasing hold on power, continuing the Terror, the hold of the Party, the predecessors to the KGB, the incarnation of millions who served as forced labourers to carry out the most grandiose civil engineering and other projects, often in the worst climatic areas of the Union, designed to underpin the industrial and economic plans of the Party. Millions died, hardly a family was untouched but no one dared speak out publicly, families were persecuted for having relatives who were enemies of the people. Stimulated, it is said, by German intelligence, Stalin murdered much of the Red Army Officer Corps, from Marshal Tukhachevskiy down and thus destroyed what was left of their capacity to resist the invasion of 1941. Statistics were falsified, usually presented as "over-fulfilling the Plan by so many per cent". Actual outputs were rarely given and no one but the Party faithful believed them. Therefore it is hard to provide an accurate economic picture of that period.

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6 As a NATO delegation to Bulgaria and Romania experienced in February 1992.

However it is true that the output of heavy industries, including mining, certainly increased many times, perhaps by two and a half times from 1933 to 1938. Stalin lied to the 18th Party Congress in 1939 when he claimed that the USSR had overtaken the capitalist countries in production techniques, as must have been obvious even to him when he conceded that output per man was but a fraction of their competitors.

Food production did improve and allowed the abolition of food rationing in 1934, but queues were long, commonplace, food was of poor quality and much was wasted because the distribution system was regarded as of low prestige. The infrastructure and communications systems nowhere nearly corresponded to those of Western Europe; consumer goods were scarce and of primitive design and quality. The USSR remained a primitive, backward country with a developing heavy industry aimed primarily at supporting the military.

The two plans did provide some improvement. It is of course arguable but unprovable whether the same or better results could have been achieved if agriculture in particular and other aspects of the distribution and food processing had been allowed to develop under private enterprise as in NEP. Some “objective” writers in the West, even emigres and opponents of the Bolsheviks, whom others would call apologists for the regime, did, perhaps under the spell of Russian resistance to the German invasion, argue that Stalin’s methods, however cruel, actually saved Russia in WW2. Love of the country can be a blinding emotion.

Certainly the pre-war plans of the central planning authorities did allow a significant proportion of industry that was essential to the war effort to be evacuated speedily to the Urals from the western regions that were about to be overrun by the German Army. Soviet industry was able to supply the Armed Forces with sufficient to repel the invasion and to play their part in the defeat of the Germans. Allied materiel was useful but in terms of quantity not of significant proportions.[7]

Postwar Plan - 1946-50

It was business as usual for the suspicious Stalinist system, returnees from the war; prisoners of war; people who had lived under the German occupation were often exiled to forced labour in Siberia because they had been “contaminated” by contact with foreigners. Stalin rejected help under the Marshall Plan[8] but took hundreds of (old) factories from Germany and re-erected them in USSR as reparations.[9] Prisoners of war were made to pay their own reparations by working to rebuild the devastation which was immense. Most of western Russia and Ukraine and Belarus were devastated; 25 million people were homeless.

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[7] Official figures from USSR quoted by Alec Nove in "An Economic History of USSR" record that Soviet industry produced during the war 489,900 guns, 136,800 airplanes, 102,500 tanks and self-propelled guns, whereas imports from USA and UK were 9,600 guns, 18,700 airplanes and 10,800 tanks - some obsolete.

[8] But American aid continued to the end of 1945.

[9] I have spend some time in one such factory, near the Black Sea, created in 1946 from a German plant, to make heavy goods vehicles. The original elements of the plant resemble photographs of a British 1900-14 factory: it would neither pass the requirements of our Factory Acts in force after WW2 nor would it attract our people to work there; however this plant is the only one in former USSR that I have seen that has been continuously modernised by its management.

The command economy rapidly reverted to its pre-war model. This was to be expected from leaders who in their own mind had won the war by their leadership and methods and who were unable to change their suspicions of and hostility to their former allies, thus precipitating the Cold War and the arms race. Stalin in his speech of February 1946 set the familiar theme of rebuilding heavy industry at the expense of the consumer. Not even in 1950 did shoe production equal that of 1940 and then only one pair per person per annum! Cotton fabrics reached the 1940 figure only by 1950, well short of the planned output but woollen goods actually reached 155 million metres, less than one per person, in the year against 120 for 1940. That is if official figures are to be believed.

However over the period the reconstruction was impressive, given all the difficulties. The USSR could cope with its self-imposed arms race, the planners could congratulate themselves. There were changes in the apparatus: Commissariats became Ministers, the State Planning Commission, Gosplan, became a Committee and its head Vosnesenskiy was shot. Committees were formed to deal with supply, later becoming a Ministry largely responsible for what became the Military-Industrial Commission and also a Committee for introduction of Science and Technology into the economy. It too was far less successful in the civilian than in the military field.

The immediate post-war period saw some relaxation of controls over farming to overcome the desperate shortages inflicted by the war, but by 1950 repression extended again to agriculture and the regime continued to cling to its pre-war dogma and tenets of Marxism-Leninism now extended by the Great Leader into Stalinism. N S Khrushchev, now a member of the Politburo, even started to carry out Stalin's dream of having collective farmers living in "agrogorody", agrotowns with barracks so that farmers would live like proletarians in towns. The main reason that this programme was stopped was because the building industry could not fulfil its part. But collectivisation was ruthlessly re-imposed. The leadership had several aims: to cow the peasantry, release manpower for industry and to increase agricultural production. The last aim failed completely; objective figures suggest that some key indices actually dropped as compared with 1933. It is also well-known that at least one-third of all crops were lost from the fields and did not figure in consumption. Numbers of cattle actually fell between 1950 and 1952. Rural poverty was rife; in his famous speech at the 20th Party Congress denouncing Stalin's crimes and mistakes, Krushchev said that many villages looked as if the Tatar hordes had just passed through. Stalin said in October 1952 that food production problems had been solved; but the figures he gave were untrue. The reality was that all figures were actually lower than in 1940.

Between 1945-49 the state repeated its financial policies of 1932-36 paying huge subsidies for food and industrial products whilst incomes and costs rose. Consumer goods and food were rationed until 1949. When it was ended prices rose in the unofficial markets and subsidies were reduced drastically in 1949, raising prices in wholesale and industrial goods. Food also had two prices, the official in the state shops and the free market price in the markets and so-called "commercial" stores - seen again in 1991-92. In the latter one kilo of beef came to 3 weeks' wages and a kilo of sugar to six weeks' wages for an average worker.

However the flow of goods did increase and this allowed the prices of consumer goods and food to be reduced every year from 1948 to 1954. This demonstrated one of the classical if elementary definitions of inflation "too much money chasing too few pounds". Free market prices were roughly 30% above those in State shops by

1953. There was indeed a sharp rise in living standards by comparison with the past, although by no means to the level claimed by Soviet statisticians. Perhaps an increase of 40% in comparison with 1940 might have been reached but the distribution was very uneven. One's impression was that the rural areas subsidised the urban proletariat, who nevertheless along with their colleagues in the "intelligentsia" still lived in communal flats. Figures as well as personal experience suggested that the planners could not prevent shortages, queues were endemic, people talked then as now not of "buying" something but of "obtaining" it. Furthermore there was a rise in inflation during the period.

In the last years, Stalin became even more authoritarian, deciding even trivial questions himself. The system was overcentralised, the bureaucracy was over-manned and over-privileged and Party bosses, know-all but incompetent in reality ran the place without consultation with experts, who in any case were not encouraged to meddle in managerial affairs. The intelligentsia made no contributions to civil life, the scientific and engineering elite were concentrated in the military-industrial complex. "Initiative is punishable" was a Soviet phrase that applied then as it still does - it takes a long time to overcome fear and arbitrary punishment.

Stalin's government style from the beginning continued that of the Khans, the warlords and the Autocrat-tsars of old, a method that the Soviets initially tried to abolish but failed. Stalin certainly reinforced personal, arbitrary rule; what he favoured went for everyone and woe betide those who disagreed, whether in poetry like Osip Mandelstam, musicians such as Dimitri Shostakovich, biologists such as Vavilov. People who were known or suspected of holding opinions contrary to the Party Line in anything (even quantum mechanics was condemned as being a bourgeois idealism), from the highest to the lowest positions were hounded from their jobs, sometimes shot or exiled and their families persecuted and their children put into orphanages. Economics was treated as a purely theoretical subject; economists were advised by Stalin in his last published work in 1952 not to meddle with "the rational organisation of production and economic planning". The Party promoted sycophantic bosses at the head of each activity such as Zhdanov for "culture". Each person had his sycophants and hangers on.[10]

Stalin's legacy was of a country of fear, official lies, massive repression, great hardship especially amongst the peasantry, inadequate food production and primitive methods, roads and transport, great privileges for the top people and massive expenditure on the Armed Forces who doubled to nearly 6 million from 1950-52 and cost from 18.5% to 24% of the national budget according to official figures, which were probably understated.

From The Death Of Stalin To The Accession Of Gorbachev

Stalin's death in 1953 led to the faltering steps away from repression but was greeted by all, except the intelligentsia, who knew they had been spared, with a feeling that God had died, with panic that there was no longer a helmsman. The leadership were scared of panic and pretended that they were united whereas, as

[10] They still do; ministers have waiting rooms with supplicants who ask for a signature to enable them to draw 22 pairs of shoes and drawers for the national boxing team; this is an actual case from 1992. Ministers do the job of a senior rating in the Royal Navy who works more conscientiously, for less money and incorruptibly.

might have been expected, manoeuvrings for power began immediately; it resembled the period after the death of Ivan IV, The Terrible. The top position was first taken by an almost forgotten man, Malenkov, who acted with Molotov and Beria as a triumvirate. He became Chairman of the Council of Ministers.

The first economic acts were to strengthen the hold of the Party by appointing key apparatchiks to head new and more powerful ministries which were reorganised and some amalgamated. But the amalgamations did not last long; six months later they were again split and given more powers. These, as Alec Nove[11] observed, surprised many who had assumed that ministries existed to carry out the task now newly assigned to them. These included approving budgets, staff levels, allocating equipment and resources. All this had been the duty of a higher authority in the apparatus. Nove observed that these powers were enlarged again after 1954 and that "this may have caused a weakness in coordination that led to the drastic reforms of 1957."

The collective leadership now decided that it was necessary to provide something for the people and made propaganda to suggest to the people that there would be more consumer goods and housing. They announced major price cuts for food and consumer goods but neglected to take any steps to increase production. Other financial steps led directly to inflation and a budget deficit. In August 1953 Malenkov announced an increase in procurement prices. He announced a new industrial policy in which both heavy industry and consumer goods would be developed together. The Plan called for roughly a 50% increase in consumer goods across the board by 1955 based on 1952 output; in many sectors it was almost achieved but it fell short in things as simple as furniture, bicycles, sewing machines and cotton, whose output hardly grew at all.

Malenkov was pushed out by Khruschev in 1954 and was sent to run a power station in Siberia. Beria was shot and Molotov retired.[12] Khrushchev was the senior of the Party Secretaries; he was a Party apparatchik through and through and like Stalin knew how to work the system to his own advantage. He dropped the consumerist society on achieving the top job. But he pushed through some major agricultural reforms, some of which had useful results. However he was a gullible chap, fell for mad ideas provided they were grandiose enough. One such was the idea of bringing into cultivation the "virgin soils"; between 1953-56 an extra 36 million hectares was ploughed, equivalent to the total cultivated area of Canada, observed Nove.

Khrushchev was an old fashioned Party boss, he behaved like a bully foreman, not just in the United Nations but across the USSR. Certainly the area sown and the labour employed on the farms increased, at a time when increased efficiencies in the Western world led to a decrease of rural labour, but actual output did not match the effort although it improved slowly and allowed purchase by the State (after personal consumption; sales on the free market from private plots actually fell) to double approximately between 1953-58.

Planning for the Khrushchev 6th Five Year Plan was apparently thorough and consultation was more widespread; its failure should have provided warning signals concerning the fundamental weaknesses of a planned economy. Tinkering took

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11 "An Economic History of the USSR", Alec Nove & Allen Lane, Penguin Press, 1969.

12 He lived quietly in the centre of Moscow; I once stood in the queue just behind him at the take-out section of the Praga restaurant and we had a short, relaxed chat.

place with wage rates, there was some relaxation in the social-employment sphere and a major price review. Socially the most noticeable were the "Khrushchevki", 4 and 5 storey blocks of flats, but better built and on a more human scale than the succeeding "factory built" high-rise apartment buildings made of pre-cast units. In 1961 the rouble was reduced to 1/10th face value but without confiscation of large notes as before and later in 1991.

Centralised planning was extended to COMECON countries which interlinked as far as possible the industries of each so that they became inter-dependent; with the usual bickering as to who gained most. Most observers conclude that all arrangements were to the benefit of the USSR. Barter deals were concluded with overseas countries "friendly" to socialism. Soviet military and other hardware otherwise unsaleable in advanced countries were bartered for sugar from Cuba and so on.

The plan was extended to 7 years, 1959-65. It planned a huge increase in the backward chemical industries and in oil and gas extraction. It may have achieved quantity but at the expense of everything else. The waste was colossal. Poor methods and workmanship ensured that about 10-15% of all gas and oil escaped to pollute the soil and water table; chemical factories dumped toxic wastes and belched dangerous fumes. The Communist system from Potsdam to Vladivostok with its redoubled output became the most wasteful and dangerous industrial system on earth. Khrushchev spent more on nuclear, rocket and conventional forces and the Armed Forces remained the dominant users of national resources.

After Khrushchev

In effect Khrushchev's successors changed nothing fundamental; they also veered between repression and relaxation but to no avail. We may therefore attempt a summary judgement on the system, how it was run and the underlying thoughts and dogma behind the decrees of the leadership.

Both Communists and some of their opponents have presented the system as being run on a basis of consistent concepts, founded on Party theory, Marxist-Leninist dogma. The Party claimed that its leaders were the best educated of any Russian Government and were therefore fit and capable of leading the country through to a position superior to that of capitalism. The historical picture shows the contrary.

Faced with crises, the leadership alternated between repression, centralised control on the one hand and modest relaxation of social and economic constraints. The Plan demanded output measured in physical terms, whether tonnage, numbers or square metres. Consequently factory managers made whatever gave them the best figures to respond to the Plan imposed upon them regardless of what people wanted or needed. There were no other criteria. It could not and did not have any feedback from the market. Relatively liberal economic ideas in the late 1950s were derided and central planning continued till the accession of Gorbachev in 1985.

Ministers and other leading officials, especially those who rose through the Party, had no concepts of how to lead and motivate people to perform properly. Some of them may well have had an idea of how awful the system really was, but they were cushioned from its effects by their privileges which extended to their families. The geriatric leadership continued to run the place as if they believed in the old methods; in any case they knew no other. May be they believed their own lies; more

probably they could not get out of their habits of thought and change their methods. Whatever had been tried within a centralised economy and dictatorship from the top, fuelled by dogma, had failed, so had relaxation from it; reform was impossible, something radical had to be done. Hayek was right - socialism is the road to serfdom as well as to inefficiency. In this sense it was more repressive than National Socialism, which it closely resembled; both were run by dogmatic leaders with power to inspire terror and thereby command obedience. Hitler did not however abolish private property and thus Germans could to some degree feel that they had a life apart from the State, and so under the tutelage from the victorious democracies could take up a democratic structure and begin to rebuild their shattered country from the bottom up, under an umbrella of consistent law which encouraged initiative at the operating level. This was and still is entirely missing in the former Soviet Union.

Buildings continued to crumble, new ones, except those for the Nomenklatura, were instant antiques with defects, the roads in the cities acquired more pot-holes, the country ones remained in the same muddy condition that defeated Napoleon, Hitler and Soviet old age pensioners, the villages stayed in the Dark Ages, the factories grew more obsolete, products when available were as crude, ugly and dangerous as ever, service was non-existent, dogma and slogan were ever in evidence. The First Section of the KGB still required one to fill out forms certifying that one had never been questioned at a Party disciplinary committee before being allowed an exit visa, which was still unavailable to anyone working in the military-industrial complex. The life expectancy dropped and infant mortality rose; conditions in Soviet hospitals were often lethal. Citizens were still ruled by and afraid of arbitrary law and the forces of repression. Foreigners were still regarded with suspicion, thought of as spies bent on destruction of the socialist State.

All this was accepted as normal by those who suffered it and had no means of comparison. The Armed Forces sucked in so much of the gross national product that it destroyed the economic base of the nation and of its own existence. Thus did the Marxist phrase “capitalism contains the seeds of its own destruction” turn in upon itself as a result of its totally erroneous concept of foreign powers as enemies and reliance upon military might to counter them.

The Effect Of The Command System [1993]

This is still of crucial importance not only to understand whence came the present, but also because basically it still pertains, with almost no fundamental change in attitude of the leadership and management. These facts emanating from before the eras of Gorbachev and Yel'tsin therefore largely describe the present situation.

- Statistics and economic claims existed purely on paper and were designed to mislead both their own population and the outside world. Figures were usually shown as percentage fulfilment of the Plan and as changes on previous figures; absolute figures were rare, inconsistent and unbelievable.

- Interlocking and complex, detailed but inefficient controls were exercised through various ministries. Top down implementation of decisions of the Plan was cumbersome and ineffective.

- Single suppliers of a given product exhibited consequent monopolistic behaviour. This policy forced the location of manufacturing activities in places

to suit Moscow and the perceived interests of the USSR as a whole rather than aim at the logical development of the constituent republics, autonomous regions etc. These suffered from unbalanced and inappropriate industries and dependence upon single crops, such as cotton in Uzbekistan.

- Customers are often very far away from suppliers who operate on a "take it or leave it" basis.

- This drove many factories to add to their core skills and functions and to do what their suppliers should have done and what good competitive sub-contractors do in advanced economies. Factories were driven to become jacks of all trades and indeed masters of very little in manufacturing terms.

- The factories were by any standards huge and hard to manage - employing up to 40,000 people and an additional 2-5,000 in their associated design offices.

- Military factories and many civilian ones also provided many of the social services which in the West are provided by the state and by private initiative and voluntary and commercial organisations. These services include: creches in factories, closed shops for distribution of food and consumer goods otherwise in short supply, medical and welfare services both in the factory and dedicated "rest homes", "sanatoria" in holiday resorts to which employees had privileged access as well as allocations of tickets to cultural events in major cities such as the ballet and visits to museums. These even extended, for civilians not working in classified areas, during the years of relative relaxation, to cruises abroad on soviet ships built in Poland or East Germany. Many military activities took place in closed cities, so secret that they were not even on the map. These cities depended totally upon military orders for their livelihood. Western readers will readily understand the total dependence upon the State apparatus that such a system engenders in the individual.

- The purpose of soviet factories was merely to fulfil the quantitative demands of the Five Year Plans to the exclusion of all other considerations. Consequently they were ill-managed, wasting natural and human resources, production regardless of effect on the environment or cost.

- If the job of factory managers was to fulfil the Plan, then the ministries to whom they reported did everything else except to prepare requirements for production and to produce. The ministries decided what was to be made, to whom output was to be allocated, which factories should supply which factories, and also set the prices. These were often, if not always, based arbitrarily rather than upon true costs. This prevented proper economic decisions from being taken at every level. Industrial managers were also denied all experience of normal commercial activity, including marketing, setting a business strategy, design for customers etc.

- Thus the central authorities played the part usually performed by the commercial departments of manufacturing firms in advanced industrial countries. The ministers themselves performed no really strategic business functions; their decisions were more of those of allocation clerks than those of a director of a major commercial firm or nationalised industry in the West. But they were very self-important and received, in a so-called classless society, immense financial advantages.

- Their effective role was totally negative. It removed all opportunities from directors and managers of manufacturing firms to behave like competent businessmen.

- Lenin constantly harped on the essential part that modern technology should play in building up the State, bought abroad basic necessities such as oil extraction technology. But Soviet Russia, no more than Tsarist Russia in which foreigners mostly ran industry and much of the external trade, had not the motivation, personnel or industrial policies to enable it to develop industrial technology, not even on the backs of foreign imports, whether legally bought by sale of gold or other basic commodities or acquired by espionage.

- The best resources, human, technical and material, were lavished upon the military factories and their supporting research and design institutes. The best graduates in science and engineering went to them; they had priority in allocation of imported laboratory and production equipment and had better access to raw materials and components at far lower prices than those paid by civilian factories - even though military factories, as in the West, also produced for the civilian markets.

- Science and innovation was organised and "managed" by high powered committees; the more important the subject, especially to defence, the higher the rank of the chairman, often a minister with no understanding of the subject. The purpose was to see that money and resources were allocated and sometimes to short-circuit the cumbersome methods of the bureaucracy to get things done more quickly. In spite of all the coordination, science in FSU has not worked closely with ministries whose job was supposed to be the design and production of up-to-date laboratory instrumentation. Consequently apparatus considered to be standard elsewhere had to be bought from abroad. The chemical industry, always backward, was unable to produce the necessary compounds and reagents that can be obtained off the shelf elsewhere. Such limitations severely slowed Soviet and post-soviet research, for example in producing identifying and testing super-conductors, in spite of the early Russian work at a theoretical level in laboratories who even managed to produced laboratory samples of what proved to be super-conductors but could not be recognised as such till years later.

Perestroyka & Glasnost' - 1985-1991

All these faults and deficiencies were well-known to the intelligentsia, as well as to people from more humble social backgrounds and merely educated in the Party schools serving in the Party, Military and Government apparatus. When Gorbachev came to power as General Secretary of the Communist Party, they briefed him and he believed them, in spite of the fact that he had grown up through the ranks of the Party. He was the first leader to have completed a university education. He adopted the view that the repression had to stop, people should be allowed freedom of expression, to criticise; perhaps he hoped that they would sooner or later turn from negative criticism to positive suggestions. He concluded that the Party and the Government systems (they were basically one and the same) had to be reformed, but hoped to keep the Party intact.

Glasnost', openness, had several objectives. One was to exorcise the ghosts and pains of the past repressions and miseries. This was certainly successful, so much so that the official Soviet press became more interesting to such a degree that people stopped reading emigre literature and *samizdat*; illegal publication inside the country became gradually unnecessary. However complaints about the past and the present did not lead to constructive suggestions nor, after pluralist policies in opposition to the CP were tolerated and then officially sanctioned, to coherent political and economic programmes.

The truth about the country under the previous regimes became public knowledge, there were marvellous and truthful articles in the leading magazines and papers pointing out the errors of the past and of the present leadership, but no constructive proposals.

Perestroyka, reform, began with a better, long-forgotten phrase - psychological reform. This was correct, it recognised that at the root of all their problems lay a wrong outlook, mind set and attitude to work and to running things. In truth there is hardly anyone in the land who can escape from the centuries' old dirigiste, centrist concepts of government. The Government and Party were determined to maintain their places in the sun and privileges and to put on a show of exercising power and authority. Economists, such as Aganbegyan, Abalkin and Shatalin, apparently liberal, recommended rapid conversion to capitalist methods, price reform and liberalisation and conversion of the rouble. These measures were to be directed from the top, none were put into effect, no fundamental changes in the Nomenklatura took place, the CP sat smugly doing what it had always done while the country and its economy went from bad to worse, this time in the full glare of publicity both internal and foreign.

Pressures forced some moves away from state to private cooperative enterprises, but there was an ambivalent approach from the state, Party and public. In the first years, these were almost without exception in the service industries, restaurants, medical services, street traders and producers of tourist junk for example. As in so many times in the Soviet past, the Communists recognised that these were essential to fill gaps in the economy but they and the general public still regarded them with suspicion, as exploiters of the people, their soaring incomes produced the old familiar jealousies and egalitarian instincts that pre-dated, but were stimulated by, Party ideology. Consequently laws, taxation systems, permission to rent or buy buildings, employment laws and decrees on permissible wages for cooperative workers came and were superseded almost weekly.

Gorbachev's concessions to moving away from the Command Economy were too late and too modest to meet the needs of the situation. His recognition of the Baltic republics was grudging and forced upon him by events. His clear signals that there would be no Soviet support for the Communist regimes in Eastern Europe led to their downfall and to the discussions for the withdrawal of the Soviet army with many financial overtones as well as those of prestige. The Army was torn and factionalised. Whilst the economy foundered, Russians, academics, economists and politicians of all schools indulged themselves in their favourite pastime of useless and acrimonious talk.

The writing was on the wall for the Nomenklatura, many of whom stole Party funds, secreted them abroad and bought into the burgeoning private enterprise of mere trading, not manufacturing or agriculture. Many adopted smoothly Western terminology in support of privatisation, the market economy and looked, but only to

the naive foreigners, to be democrats and marketeers. There was a wholesale return to primitive capitalism, of small traders, who had no thought other than self-enrichment. Such steps were sometimes applauded by ignorant Westerners who argued that they had to pass through that stage but forgetting that if that were true then Russia would also have to pass again through the revolutions of 1905 and 1917 and repeat the whole process. Evidence for this is to be found in the undercurrent of resentment amongst ordinary Russians who understand that the traders are gaining vast incomes and contributing nothing. Furthermore there was not much distinction between the traders, the Nomenklatura and the Mafia.

The increase in chaos was predicted but no steps were taken to stop the rot. Consequently it became obvious that there would be a coup against Gorbachev by people in the Army, KGB and the Old Guard who would return to a Central Command system with its repressions in order to restore law, order and labour discipline. The West on the whole has always personalised politics and failed to understand the role of the Party caucus, even in their own countries, let alone Russia. Consequently they felt that Gorbachev had to be supported regardless of his approach. Even to the last, Gorbachev failed to recognise that the Party was finished and the break up of the Union was inevitable.

The End Of Another Empire

Yel'tsin tried and largely failed to hold together a rump Union at least in economic and security terms, but the economy reverted to primitive barter even between factories within Russia as well as between Republics.[13]

The price liberalisation of January 1992 led, as was obvious, to hardship for the honest masses. Some food did come into the shops and people were now free as they said to come to stare at the goods, stare at the prices and to leave empty handed. It is probable that the new food supplies were not new production but were held back against the price rises. Farmers would not supply food when they have nothing to buy with their roubles; this is reminiscent of previous occasions such as the early 20s, the late 20s and early 30s. When money savings are exhausted and equilibrium is achieved between supply and manageable demand there was further hardship rather than gradual improvement. Yel'tsin made the same mistakes as Gorbachev, the Communist predecessors and the Tsars - issuing impulsive decrees without due thought or consideration of their effects. For example in January 1992 he issued a decree loading an extra tax on businesses, one of 28% VAT. Its purpose was to balance the Government budget. There were universal protests and the hoteliers were reported to have got up a delegation to see him. The story goes that he told them that he would negotiate a special exemption for them on his return from talking to George Bush. In the upshot he reduced it to 15%. The effect on the budget was not explained in public, so far as I am aware.

He also announced sweeping price reforms, with some increase in wages and a drastic reduction of 50% in spending on military equipment. He added that he would pay the wages for twelve months and then cut out support. On April 7th he announced that he would reduce taxes to stimulate production and subsidise industry and agriculture; both steps a reversal of cogently argued policies forced

[13] In February 1992 Yaroslavl, in Russia, blackmailed the Minsk tractor factory by demanding $10m and 10,000 tonnes of meat in exchange for a year's supply of diesel engines. They got the meat but no dollars - which were in any case non-existent in Belarus.

through his Parliament. He demanded and got at the same time increased powers to run the economy by presidential decree. So much for consultation and democracy. Readers with a good memory will recognise the symptoms of inconsistency, ad hoc and arbitrary measures, back tracking in ever decreasing timescales and so on.

The Economic Legacy Of The USSR

There are some essential elements of soviet economic intentions and practice which have carried over into the practices of the Gorbachev and later the Yel'tsin 'reforming' regimes and also provide a simple explanation for current practices. All the post-Soviet Russian leaders completed their education in the soviet system; those of middle age were also working in the Soviet hierarchy.[14] It would have been unnatural had they managed to govern without reference to the structures and methods of their soviet past. The soviets, in their turn had also adopted many of the basic methods, prejudices, emotions and aims and also of course the bureaucracy of the tsarist past. We should be aware of the way the soviet economic system managed to survive central planning and the prejudices against orthodox western economic and financial methods as practised in a liberal democracy.

There were three financial systems working concurrently alongside each other:

1. **External Trade**. The State bought and sold everything. Imports were mostly technical goods, in bad times food, especially grain by the million tonne from N. America, occasionally after the death of Stalin some consumer goods. This was paid for in cash and credits, generated and backed by gold and by export almost entirely of raw materials and also of grain, even in hard times for the soviet people. The external account was entirely separate from that of internal trade. Soviet commercial negotiators acquired a reputation for tough but fair dealing, their credit rating was high and they never to my knowledge defaulted on a deal or contract. It goes without saying that there was rigorous exchange control; it was a serious crime to possess foreign currency, to import or export soviet currency. Much foreign trade was also accomplished through barter. This was especially true for trade between Russia and the socialist camp to whom Russia gave arms and some industrial equipment in return for goods, for example sugar from Cuba and cotton from Egypt. The values of such trade again were set arbitrarily to suit the deal, the politics and propaganda value rather than upon calculated or true costs to Russia.

2. **Internal Trade**. The State owned and controlled the means of production and distribution; it set the transfer prices between enterprises as well as the final prices for goods sold to the population. These prices bore little relation to real costs and were fixed for political reasons. Costs were based on arbitrary, centrally set or approved values. The difference between costs and income in the enterprises were appropriated by the State and provided the means for supporting the long term political aims of the Party. These were primarily prestige projects with a military connotation, especially Space and rocketry, and those which might be used to persuade the Soviet people and the foreign fellow travellers that Soviet Russia was in cultural terms the equal, if not the superior, of foreign, bourgeois cultures. This trade was largely a non-monetary economy. Transfers of goods between enterprises

[14] Yegor Gaydar, lauded by the West as an economist who understood the market economy and could be trusted to inaugurate it, wrote a chapter in a book published in 1989 in which he wrote 'Soviet economics is far superior to bourgeois economics'.

were accompanied by transfers in the ledgers in the ministries. No money changed hands officially. Due to the inefficiencies of the soviet system, outputs rarely met the Plan, in spite of the large investments in useful projects. Many projects were left unfinished even in soviet times. Shortages were commonplace, enterprises with a plan to fulfil by the end of the month went to extraordinary lengths to obtain essential components from suppliers. A shortfall from the Plan was a serious business, regarded as a crime; a worker or engineer might be shot or serve 25 years for a glaring case. Engineers even in military factories were not doing a proper managerial or professional job; they were progress chasers and fighting the crisis of the moment in order to survive. Evolutionary improvement of performance was not a priority.

3. **Consumption by the population**. The State decided what proportion of its income from profits and foreign trade could be allocated to housing, utilities, education, medical services, pensions and wages. Intentionally, most of this social support was also non-monetary, heavily subsidised by the state; the population paid only a small fraction of the arbitrarily decided costs of these services. In the late 1980s a Moscow family with a joint income of 400-500 roubles a month might pay 15-25 roubles monthly for rent and utilities. Privileges such as heavily subsidised travel to and accommodation in a tourist resort were at the decision of local Party and collective organisations at the place of work.[15] Even with the artificially set exchange rate of later soviet years of $1=1 rouble, people's monetary income was small and yet they survived at a modest level which for many people did slowly improve.[16] Consequently the need for money in circulation was quite small. People had no experience of having a current bank account, or handling money beyond their daily needs. Savings were quite high although interest was low.

With all these controls in place what were the economic reasons for the collapse of the USSR? The most likely answers are:

1. The insupportable burden of the military and related budgets, running at something like one third of GDP. To this can be coupled the expenditure on other prestige and grandiose projects begun for political reasons and often uncompleted.

2. The reduction of return on capital investment due partly to poor design of equipment for civilian purposes and workmanship of soviet engineering industries and partly to poor management of the production enterprises themselves in every sector of the economy. This last factor also resulted in poor use of imported production equipment, even the latest.

3. The damage to the health of the population due to massive environment damage and pollution.

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[15] People depended on the mutual self help of the extended family and on the produce grown on their country 'allotments'. Towards the end of the Soviet state, some private activity was permitted but much, such as that offered by doctors and dentists, went on in a largely tolerated grey economy. Many of the officials themselves used these services but the professionals knew they were at risk at any moment of denunciation with dire consequences.

[16] For example in the late 1980s a professional engineer, doctor, manager or scientist might earn between 250-500 roubles a month depending on seniority; a tram driver, factory foreman would earn around 300, more than a new university graduate. Pensions varied between 30-250 roubles a month but there were significant additions for meritorious service, especially to the Party. Old age pensions guaranteed under the 1936 Stalin Constitution were not actually paid until the mid-1950s at the earliest.

4. The continual weakening of a basically primitive infrastructure throughout the Union.

The Roundabout Of Russian Reforms

The above inventory of goods taken on the voyage from tsarism, through Soviet Communism to the Reforms of the Gorbachev and Yel'tsin administrations may not be complete but covers the most important of the flawed inheritance of the current regimes. This is exacerbated by the key errors of their western economic advisers, whose mistakes are due to ignorance of Russian realities. This also provides the basic reasons why Russia is not likely to escape its present muddle, chaos, in-fighting between ministries, conflicts of policies and decrees, its present stagnation of the sinews of the economy, its increased reliance on export of raw materials and purchase of foreign technology from electronics and modern cars and airplanes, even to quite basic run-of-the-mill technology and increasingly not only basic foods but luxuries such as foreign vodka, bottled mineral water and soft drinks.

In these circumstances, one cannot predict even a modest incremental advance to the kind of society in which honest businessmen will feel comfortable. They may, with difficulty learn to flourish. The mass of the population cannot look forward to maintaining their present, miserable existence let alone look with confidence to a significantly improving economic future for themselves or their families.

One might consider the post 1991 situation as akin to that of the "robber baron" period of capitalism at the turn of the 19th/20th centuries in the USA. This saw a ruthless struggle for power between tycoons who built up empires in agriculture, industry, mining and railways. The deep sense of social morality in the USA gradually converted the tycoons into passing respectable businessmen who obeyed the law and who became highly visible philanthropists. On this basis one might hope that the "Rich New Russian" might in time be similarly transformed. However there are no social forces that will turn them away from vast personal accumulation of wealth; since they are inextricably intertwined with the power structures there is no democratic means of forcing them to obey the law, even if it were properly formulated against exploitation.

In fact the situation is even worse. New Russian capitalism is not based on creating wealth from manufacture, agriculture or the infrastructure. It is based on trading, mostly import and export, and on financial operations which have nothing to do with the real economy. The new class of entrepreneurs are in reality Merchant Traders who seek power, privilege and wealth through the power within and over the Government of cities, regions, republics and of the Russian Federation itself. In this way they have reverted not merely 100 years but between 400-600, years to the situation in Western Europe where the Merchant Guilds dominated economic and political life. These Guilds, whether local within a City such as London or Liege or international such as the Hanse, created the circumstances for their own wealth through monopolies sanctioned by the King. They depressed the condition of the artisan guilds which were rigorously excluded from these privileges. Their power was frequently opposed by the people, sometimes supported by the Church and later by the growing class of manufacturer capitalist. The privileges granted by the English Crown to the Merchant Guilds were resented by the last group, by 1640 well represented in Parliament. A small example of the use of privilege to a favourite as practised by President Yel'tsin was the grant of unlimited tax-free

import of alcoholic drinks and tobacco to the Minister in charge of the Sports Foundation. As a result of the resale within the country billions went into private pockets. Yel'tsin might have been copying Queen Elizabeth the First of England.

Dobb observed that the long domination of the Merchant Capitalists in West Europe retarded the development for a long time of manufacturing capitalism. The same thing seems to be happening in Russia. The reasons are very clear; amongst the work of other analysts my papers expose them in some detail. Other authors worth consulting are Marshall Goldman of Harvard University's Russian Research Centre whose book "Lost Opportunity" was published in 1996. Also Kevin O'Prey whose book "A Farewell to Arms?" published by Princeton University Press in 1996, provides a succinct analysis of the weaknesses in the defence industries of Russia which contribute to their failure to become efficient and also to develop competitiveness in designing, making and selling systems and products for non-military applications. The defence industry employs the vast majority of qualified scientists and engineers in the fSU, almost 4.5 million people and represents the least incompetent sector of the manufacturing base of the fSU.

Briefly the handicaps can be summarised as follows:

- Absence of a coherent legal and fiscal system which can be trusted to set the scene for honest productive and competitive business for long enough for businessmen to be able to invest in anything except activities that yield short term income and profits. The present chaos of ill-thought out and frequently modified or even withdrawn decrees makes it impossible to run an honest, thriving business.

- A failure by Government and the banking system to put in place of the almost cashless system that operated in the Soviet Union a means of collecting and paying debts between commercial firms, from firms to their employees and paying taxes and other dues to local, regional federal authorities. The present situation works in the short-term interests of Government, banks and debtors of all kinds. The problem of non-payment of wages, salaries and monies owed to individuals, both those in work and pensioners is partly due to this problem and compounds the downward slide of the standard of life for all but a small minority.

- A failure by Governments and by many foreign economic advisers to understand that liberalisation of measures at the macro-economic level by itself does little or nothing to stimulate the economic activity of the country at the working levels. In fact some measures have contributed to the flight of capital, financial manipulations which enrich individuals who include presidents of republics, regions, mayors of cities and regional and federal government ministers, officials and even senior officers of the Armed Forces.

- These aspects have led to an acceleration of corruption and the personal enrichment of the rulers which was visible even in Brezhnev's time and which was part of the normal way of life in tsarist times.

- One gets the impression from long association with Government Ministers that most of them not only do not understand the real problems, but even worse, that they do not want to make the necessary changes to create the ambience that would allow competent people to do so. Both at Government and at operating level people demand that the Government 'subsidise' their every loss

making activity, from R&D, through transport, manufacturing, mining and agriculture.

- Even today, there is little understanding of the need to earn a surplus and thence to pay taxes on the profits from which money might be forthcoming to pay for essential non-commercial activities such as health, education, welfare and defence. People still talk about production dropping, not lack of sales or demand. Production is sacred and must be subsidised even if the products lie in the yard.

Privatisation

Much play is being made with the word "privatisation". Many people in the Russian and other governments of the fSU would have the west believe that privatisation proceeds apace, even in the military industrial complex. Naive westerners are asked to infer that this process is beneficial to the local economy and that it represents a useful step toward conversion to a market economy. This is far from the truth.

There are several vehicles for privatisation in the fSU; none of them correspond to our concept. My old friend and former industrial colleague, Eric Lowe, provides an excellent definition of the British understanding, namely: "incorporating individual or institutional shareholders into a body corporate whose powers and activities are limited only by the Companies Acts and the articles of association under those facts and with the relationship between the shareholders defined by any shareholders agreement that may be attached to the Articles."

The methods applied in Russia come nowhere near these concepts. Currently there are two methods mainly employed for large enterprises and especially to those in the military-industrial complex (MIC) which are permitted by Government to be "privatised".

1. The workers and directors of an enterprise have, as has every citizen, been issued with vouchers whose face value at issue was Rubles 10,000. Values have increased partly due to speculation amongst illegals who wished to control cheaply some enterprises.

The directors of manufacturing, R&D and design organisations have organised the take over in such a manner that ensures that they retain control which must not pass into the hands of outsiders, especially foreigners and the Mafia.

The basic method has been to persuade the work force and staff to buy their own enterprise and to provide in writing that if they wish to sell their shares they must give first refusal to the directors (I have seen no mention of the requirement to make offers to worker-colleagues, but I would have thought that this is also likely).

The upshot is the formation of a good, old-fashioned "workers' collective" dominated by the management. The directors are in practice immune from dismissal; the workers win vote for them especially if they promise and can continue to deliver state subsidies to pay their wages and continue to provide social support. This leads to a continuation of the inefficient management methods of the command economy and provides no incentive to move to a market orientated business.

(Although in theory it does not preclude it). But Yugoslav as well as Soviet experience suggests that this is unlikely. This method is applied also in Lithuania.

2. The second method, which has been recently applied to some parts of the MIC itself, was described by Professor Julian Cooper at his seminar in Birmingham on 29th March 1994. It continues the first method but the State wished to retain a Golden Share in order to protect its interests. This follows an old British idea, but with a significant difference. The Union of Industrialists and the directors of the MIC demanded and obtained the surrender of the Golden Share to the directors of the "privatised" MIC enterprise thus exercising the powers of the State themselves.

In theory there might be an advantage over the old system through which the Ministry of Defence prescribed detailed regulations for the control of the factory, which conflicted with one another and ensured the subservience of the directors, who were always at the mercy of the Government Inspectors for breaking one regulation in order to fulfil another.

In practice however it is unlikely that the directors win be free of directives from above. The State Committee for Machine Building provides the factories etc with detailed instructions as to what they are to design and make. This prevents them from acquiring essential experience of market wants and how to design to meet them. Other pronouncements of the Government, from the Prime Minister, Mr Chernomyrdin downward make it clear that they have not escaped from the methods of central direction of the past.

Therefore the changes in structure, such as they are, are unlikely to lead to improvements in business competence that are essential if the MIC is to become useful to the national economy. The recombination of R&D, Design Institutes and manufacturing firms into new sounding Financial-Scientific-Production groupings do not change the basic deficiencies of the system.

As Eric Lowe, who has had useful experience in the MIC in Minsk, Belarus, points out, the term privatisation has political overtones. These have perhaps an innocent flavour, in that the Russian perpetrators and users of the term do not understand what they are doing and how it differs from real privatisation with all that it implies for the independence of the direction of the Company from State control and interference. There is a less innocent aspect however. It is aimed at persuading the west that Russians who employ the term, amongst others of western origin, are active reformers, "one of us", whom we can trust to pursue useful paths that win lead to a successful market economy.

This is far from the truth. A more accurate term is needed to describe current events. Even without it, it is not difficult to understand them.

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Some Notes On The History Of Soviet Science

(These notes largely follow Zhores Medvedev's excellent account in his book "Soviet Science" OUP 1979. But I have added where appropriate comments mostly from my own experiences post 1958.)

1917-1920. The Bolsheviks were very cold toward "bourgeois" scientists but, amongst them, there were a few liberals who welcomed the revolution. These included Timiriazev and Williams who were supported by the new regime. But the Red Terror came, a result of the basic class warfare of the Bolsheviks against "privileged people". These included scientists who under the Tsarist regime received honoraria simply for being academicians.[1] Many of these, including some excellent scientists, were murdered. Those who could emigrated. This escape was stopped about 1926. The USSR lost most of its intellectuals during this period. So a generation of teachers and doers went abroad or to their deaths. The effect on the next generation was of course disastrous.[2] Vavilov, later to die as a result of Stalin's championing of that charlatan Lysenko, saw the scene very clearly. He wrote, "With every day that passes the ranks of Russian scientists grow thinner and thinner and the fate of Russian science lies in the balance. Replacements are many but few of them are real". Barely literate people but with the right class background were rushed through an elementary education, the privileges of RAB FAK (*rabochiy fakultet* - workers faculty) and placed in positions of authority. This was to happen again and again in Soviet history, placing ignorant people in high positions of authority in the direction of the country, not excluding that of science. Many are still there in 1995.

The golden period of science in USSR was from **1922-28**. This began under Lenin's New Economic Party (NEP) which placed reasonable funds at the disposal of science ostensibly in support of revival of industry and agriculture. Those few remaining good scientists who had their education in Tsarist Russia and had had international contacts and who did not emigrate were encouraged by Lenin to found useful research centres and to educate younger people. Tsarist Russian scientists were good at academic theory and were able to pass the groundwork to some younger people, but not for long enough. This period lasted for about 4 years after Lenin's death but it was brought to an abrupt and cruel end by Stalin.

Stalin's Purges 1929-36. This was the time of looking for saboteurs, the class enemies, the counter revolutionaries. Every small accident was their fault so they went to gaol, to exile or to their deaths. The most infamous example was that of the "Miners", in Russian the Shakhtyites. Stalin addressed the Party Central Committee in April 1929 thus: "Shakhtyites are now ensconced in every branch of our industry. Many of them have been caught, but by no means all. Wrecking by the bourgeois intelligentsia is one of the most dangerous forms of opposition to developing socialism. Wrecking is all the more dangerous in that it is connected with international capital. Bourgeois wrecking is a sure sign that the capitalist elements have by no means laid down their arms, that they are massing their forces for new attacks on the Soviet regime."

This resulted in the young red experts denouncing the older generation of scientists and engineers. In their denunciations they invented groups, spy cells etc. Large

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1 This copied the habit of other academies in central Europe.

2 Just as it has been in post-Hitler Germany.

imports were made in this period of foreign machinery, which was put to work hurriedly. The workers and engineers were untrained and unskilled in its use and so accidents occurred as well as much damage. These of course were put at the door of "wreckers", rather than at that of the regime for failing to carry through proper training.

The period also saw the rise of the RABFAKERS, peasants and manual workers who impressed Stalin that they were practical people who could deliver when the "old theoreticians" could not. It also saw the rise of people trained mainly in Marxism, dialectical materialism and who influenced the direction of funds, the fate of thousands and ultimately the death of science itself. Good research and engineering requires that people must feel free and be fearless in challenging conventional wisdom. They must be free to make mistakes and to learn from them. The regime of Terror, the promotion of politically correct people and ideas promoted fear, and the phrase "initiative is punishable". Free thought was doomed and every creative aspect of Soviet life, including military technology, was handicapped.[3] 1929 also saw the end of independence for the Academy of Sciences which came under Marxist control.

1936-1940. Continuation and intensification under the Terror. Many thousands of scientists disappeared. Some of today's honoured and famous names such as Kurchatov and Tupolev were imprisoned and as prisoners continued to work, designing nuclear reactors and airplanes respectively. Even Landau was arrested as a German spy. Only Kapitsa, with his great international reputation, saved him by presenting an ultimatum to Stalin. This was the beginning of -

Research Prisons 1936-1953. These were the origins of the closed cities about which we hear so much now and which we are asked to help. They were originally staffed by prisoners, aided by juniors drafted in by the big battalions and finally turned from research-only centres to research production centres by drafting in factory workers. Their job was to turn out nuclear weapons, chemical weapons, space systems. The first satellite was designed by Korolev, who was released from a mine in Kolyma to do it. He, Tupolev and others were only released at the end of WW2. Their job was uniquely to aid the militarisation of USSR, firstly against the very Germans Stalin helped until 1941 and then against his allies during the cold war.

Cities such as Obninsk, Dubno, Chelyabinsk are of this nature. Their production units were staffed, under Beria's direction, by masses of slave labourers. They are usually heavily polluted by radiation, toxic and industrial wastes. it is doubtful if the pollution can be cleaned up. Perhaps their best future is to become dead cities like the Mayan. Unfortunately there is no jungle to envelope them. This era murdered not only people but also what might have become promising in Soviet science.

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[3] People in their formative years, say in their late 20s to 40s during the late 1920s, would still have been active, if they lived, till the 1960s and early 70s. They would have passed on their cautions to the generations of their children who are now mature seniors in the Russian apparatus. We have also to remember that this fear persisted until 1953, the death of Stalin and certainly had no chance of being eradicated from people's mind until perhaps 1985. So a person even as young as his mid-30s in 1995 would have had to have been an exceptional character to have an independent mind, unconditioned by the Communist mentality.

1953-1964. Khrushchev's reforms emptied the Gulag. But many of the released scientists, some of whom I knew quite well, were badly damaged in physical, mental and psychological health. They did little or no good work after their "rehabilitation".

It also became possible for soviet scientists to look objectively at their own science and technology. It was now possible to admit that it was almost universally backward; previously such comments would have been regarded as treasonable. Khrushchev took what to him, as an ignorant peasant, looked a logical step. It was to study and copy the West. Japan after 1945 had done the same; the difference was that the Japanese were capable of evolving product and process technology from what they learned. The Soviet system prevented it. What they copied remained in its original form, sterile.

One fundamental lesson was well understood everywhere except the USSR and is still not understood in post-Soviet Russia. I refer to the intimate interplay of science and technology. The development of modern science requires ever more accurate measurement of an ever wider range of attributes. This requires ever better instruments and other tools. It is rare indeed in the USSR to find a piece of technology that is equal to that of the west. The handicaps to soviet science are obvious. Perhaps this is a reason why it reverted so easily to the accursed 19th century German-Russian predilection for academic theory rather than to do anything useful.

Another consequence of the era was to create central institutes for relations with western scientists and their literature. This centralism still reigns in mind and fact in 1995. This in fact perpetuated the isolation of the working scientist and engineer who simply did not have access to his contemporaries abroad. Reading their papers, usually in translation since at that time few read English, by then the lingua franca of science, would be perhaps six to twelve months after publication. This meant that there was a gap between the work being done overseas and the Russian reading about it of about two years. The opportunity to sit in a foreign lab and see for himself was very rarely permitted, since almost all soviet R&D was done for the military the workers were not permitted to travel abroad.

Science and engineering exploits in space were of course a show piece. Khrushchev loved it; his boast that soviet science and technology as well as industry and agriculture would overtake those of the USA fooled the laymen in the West. Certainly one effect in the West was to increase numbers of people studying and entering scientific and engineering careers, dazzled by numbers in USSR but probably foolishly. But the numbers were impressive. (Reported numbers taken from Zhores Medvedev's book "Soviet science" OUP 1979 except where stated.)

Universities and other research institutes		**Numbers of research workers**	
1913	258	1917	about 11,000
1937	2,000	1941	150,000
1941	2,359	1953	250,000
1953	2,400	1964	650,000
1964	4,800	1976	1,254,000
1994	5,000[(a)]	1991	2,500,000 (Goskomstat)
		1992	1,500,000 (Goskomstat)

(a) From Kulyagin, dep minister of science Moscow.

	Candidates = (PhD)	Doctors = (DSc)
1950	45,500	8,300
1976	375,700	34,600

NB these figures relating to workers and their qualifications embrace every aspects of "intellectual" activity not only in natural sciences and engineering.

The West had more reason to respond to the threat from the development of advanced weaponry and their manufacture in vast quantities. In the end this was a main reason for the undoing of the USSR as it bankrupted the country. The second reason was the monumental waste and gross inefficiency of the regime.

My Experiences

I began to visit and to work in Soviet research institutes during this period. I was privileged to see the work of some really great people in my own fields of applied mechanics, physics and polymer science. One of them, an outstanding physicist, then in his 60s, explained why he restricted his work to proving his basic theory by different means, when everyone abroad accepted it. He said "They up top" left him alone and he was afraid that they might interfere or do even worse things to him, should he move to a new activity. One outstanding Academician and an excellent applied mathematician, who had visited us in England, became very frank, even invited me home. This was then a rare event.[4]

The sectoral and Academy of Sciences laboratories that I worked in were lavishly equipped. One for example had three electron microscopes still in packing cases in the corridors. Foreign currency was not then stinted to allow such laboratories to do good work, were they so minded. Unfortunately I was forced to conclude that they were interested only in copying our theoretical work and reporting our applied work, but nowhere did they attempt to explain our work, or even their own, to the factories processing polymers or to those designing equipment that could and should have benefited from the work. It would have been necessary for the people in the institutes to transfer to the design centres and factories to implement their work. It was not to their advantage to do so. It would have meant losing their privileges such as the right of abode in Moscow and putting up with all the discomforts of life in the provinces. So the work was just published in journals and sometimes only in an incomprehensible form. They were removed from reality. Practical technology in rubbers, plastics and composites suffered as a result. Over the years of visiting this set of laboratories I never saw an experimental attempt at validating theories of processing. This area of work is still decades behind. In spite of an excellent laboratory working purely on tyre technology, the USSR in this period was forced to buy a tyre plant from a British consortium, with which I was associated. It was interesting to note the insistence of the purchasing authority that every conceivable aid to productivity was to be provided but that the operators never bothered with them once the plant was commissioned. Contemporary factory technology from abroad, like the electron microscopes, was treated more as a prestige toy to boast about than as a useful tool.[5]

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[4] The fact that I was a Russian with a family in Moscow helped because he know I did not dare to report his anti-Soviet remarks to the authorities for fear of what he could do to my family.

[5] I found examples of this mentality from 1987 to 1994. In a weapons factory in Moscow, robots and machining centres on the shop floor lay idle, with parts broken and

The Academy of Sciences laboratories and some of the sectoral ones, including those just mentioned, took great care to be classed as “first-class institutes”. This gave them not merely prestige but better funding, equipment and of course better salaries for their staff. The Director inevitably became an Academician, which at that time also gave him an honorarium equal to his salary. Salaries were based not on position in those days but on rank, ie Professor, Doctor of Sciences or Candidate. To be an academician entitled one to wear a special badge in one’s lapel but the title had become so devalued by the admission of mere Party hacks that many really good scientists were too ashamed to display theirs.

To work in a second class Institute was really miserable. Such a one was the Moscow Institute of Prosthetics. I was during the late 1950s and early 1960s working in this field part-time at Roehampton; we had several visits from the senior staff of our counterpart in Moscow. I spent some days familiarising myself with it. The staff were very dedicated, underpaid, overworked and under great difficulties of funding; the buildings and equipment were old, badly laid out, inadequately maintained. Their results in artificial limbs had barely progressed in design and workmanship from those of the West at the end of the First World War. They were heavy, cumbersome, uncomfortable to wear and lacked all our modern systems engineering and materials. Amputees really suffered and it was then and still is noticeable that few wearers of artificial limbs are seen on the streets even in large cities. Unilateral amputees mostly walk with crutches, bilateral amputees stay at home.

The St Petersburg (then Leningrad) Institute, unlike the one in Moscow, engaged in “maskirovka”, pretending to do better work than it really did. Some westerners, amateurs and journalists, were taken in by the activity.

Science City in Novosibirsk and its filial in Irkutsk are too big and varied to assess in a phrase or two. My assessments over the years 1972-1991 varied from “excellent” for applied mathematics and geology to “fake” in cybernetics and automatic control systems. In one case, the PhD students sat with me in their laboratory and just laughed at their Professor’s exposition, pointing out the realities and confirming my own assessment of his fraudulent mathematics. Cybernetics had been proscribed along with quantum mechanics as bourgeois idealistic science during the Stalin period and was only officially permitted late in the Khrushchev era. It is not surprising therefore that even in the field of theory it lagged. The poor state of electronics prevented it from catching up with foreign equipment except where the Soviets imported components. In the military field and in space great efforts were made to produce reliable and well functioning systems. In some cases, through excellent basic thinking they succeeded, but not in civilian applications.

Conclusions

1. It is still acceptable in fSU to claim that its science is the best in the world. These remarks stem from decades of propaganda, and the high ups are unable to distinguish truth from fiction. This short history shows that “soviet

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covered in dust. The production director explained that the workers refused to operate them because it would devalue their manual skills. In Bulgaria, the general in charge of the medical service demanded gifts of tomographs when at the same time his hospitals were devoid of elementary equipment such as disposable syringes, sterilisers, bandages, swabs and sheets.

science" was never allowed to develop normally. It was subject to political diktats, it worked mostly for the military. There were rare examples of good work. But most of it was pedestrian, writing papers for journals for reasons of prestige and the work was rarely used even when it was usable.

2. One hears remarks, even from sincere and competent people in a laboratory that something or other is unique. This is explained by their isolation not only from foreign work but from the work of others even in their own city.

3. Soviet science was handicapped by propaganda, a regime of lies, isolation, fear, divorce from intimate connection with users and their needs and assessment and from good engineering.

4. The adverse psychological ambience persisted at least until 1991. Therefore it is unlikely that even young competent people today will be free of these handicaps and it will be a rare person who can shake them off and be on equal terms with the best foreign colleagues.

As we have seen in discussions with the deputy ministers for science in Moscow in December 1994:

5. The organisation of soviet and post soviet science is still far too centralised, subject to arbitrary rules and methods for funding and support. It fails to determine what and who should be supported by objective criteria.

6. Scientific activity is still organised around vast institutes away from the users, with 1.5 million people officially employed in them and absorbing about 1% of GNP, mostly to no benefit to the economy - except to the military.

For these reasons it would be indeed surprising if the boasts could be made good. The west should not provide any blanket encouragement or support for post-soviet science, not even to keep military scientists out of mischief. What is needed is to identify really promising workers and to help them to become self sufficient, earning their own living through consultancies, collaborative activities with the west and eventually with their own industry and agriculture that badly needs their help.

We should encourage links between users and providers of R&D. This will soon show what the users think is worth paying for and what is not. The latter should be allowed simply to wither away. The social consequences will be serious and will have to be coped with. However it is clear that those at the top of the Russian Government have no ideas beyond demanding support for all science.

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Toward A Rational Philosophy For Science & Engineering In The Former Soviet Union

It is a painful but also a true paradox, that some of the most cherished parts of soviet life, which are still held locally in high regard, have also contributed to the collapse of the fSU and also to the continuing decline of the economy in all its territories. Some of these faults have been evident not only in the fSU but also in Great Britain and in USA where many lessons have been and indeed are still being learned, especially following the successes of Japanese mechanical and electronics industries.

Let us, to get straight to the point, set out the key issues.

The role of science and the scientific institutions such as the Academy of Sciences itself, the Sectoral Institutes, those belonging to the Ministry of Defence and to the educational establishments.

The organisation and curricula of higher education in science and engineering.

The way industry and more especially factories are organised and managed.

Science & Research

The president of the Japanese Science and Technology Agency told me a year ago [1993] that he had no difficulty in funding curiosity led science such as radio astronomy, which could have no possible benefit to the national economy. This was because, he said, “We are so rich that we can afford to treat pure science as an art form and as part of our contribution to world culture.” I listened with envy, knowing that Great Britain was by no means rich enough to take the same view and to spend the same share of its national resources in that way. Plainly Russia is not rich enough to take this approach either.

A country, such as Russia and Great Britain, with a long history of outstanding scientists, engineers and mathematicians, can justifiably provide funds to a proportion of them to work in curiosity-led research with no foreseeable application. After all, who could have foreseen in 1848 that George Boole’s work “The laws of thought” would be indispensable to modern machine computation? However the art of allocating resources to scientific and technological research and development must apply sensible proportions to “pure” and targeted” work both short and long term. This is true even in Japan, which applies some extremely interesting ways of stimulating and supporting really creative people in addition to the rather routine ways used in fSU and UK of submitting programmes of work to committees of assessors perceived to be experts in the field. But this is not the place to describe those methods.[1]

In both fSU and UK the balance between “research” whether scientific or in engineering and its successful application in industry and other parts of the

[1] See "Handicaps to British Innovation", A Kennaway, 'Nature', January 21 1991.

national economy has not been as good as it is in Japan or indeed as effective as the state of the nation requires. Some of the basic reasons are common to both countries:

1. Scholarship and abstract thought ranked in a scale of values amongst the ruling circles, the academic world and eventually much of society itself very much above that of practicality, especially of industry and more especially of manufacturing. In Britain this was true throughout the 19th century and indeed it can be held that British industrial performance until quite recently suffered from those snobbish attitudes. Even today one can read articles claiming British intellectual pre-eminence, especially in pure science, by counting the number of Nobel Prizewinners per capita compared with Japan.

The Soviet equivalent of such boasting is to cite the number of qualified scientists and engineers per capita and to show that this is greater than in advanced industrial countries. It is the same error as those of the Stalin period that the output of steel, tractors and the KWhr/worker are higher than elsewhere. No account is taken of the crucial issue, that of the effectiveness in practice of such ratios. If the Soviets were to claim the biggest microchip in the world it would be about as impressive.

2. Reverence for quantity of scientific output has played a part. For example, it is easier to get a grant from a western funding agency as well as from a Soviet Academy by stating the number of times that a worker's papers have been quoted in the International Citation Index. This is also true for the number of publications in refereed journals and papers given in international conferences. The Soviets are very fond of quoting such data as support for their claim of high standing of their scientists. Such data have more to do with fashion, with the introspective preoccupations of a small coterie intent on justifying their position at the expense of others than with genuine value, profundity or future applicability. The Japanese are less concerned with such matters or with Nobel Prizes.

3. The need to apply for support from committees of specialists does not necessarily ensure that the money is going to the right people and certainly not to the right project. Specialist committees in any country are by definition staffed by one's co-workers in other institutes who are also in competition for the same pool of resources. It is not unknown for awards to be withheld on grounds of competition or jealousy, or given on the basis of "I will support this one of yours if you will support the next one of mine". Objectivity is not guaranteed. Even in Japan the money has to be seen to be distributed amongst a large number of institutes and people; consequently there are complaints that the size of individual grants is too small to be useful and is therefore wasted.

One of the results of all this is that much of the so-called "research" work in UK and in Japan is very pedestrian and repetitive. Much of the work in the Soviet institutes is no better.

4. An additional factor in the fSU has been that patronage has been extended for non-scientific reasons, such as Party membership, a powerful patron high up in the Party and Nomenklatura or in an important ministry. Many of today's senior members of Academies are plainly incompetent, not only to expert western visitors but to their own PhD students. One wonders how many such Party hacks had their dissertations written by their students.

5. Another factor which still distorts science and engineering in fSU is that nearly two thirds of all qualified scientists and engineers work in one or other of the defence establishments. In Britain and USA, even at the height of threats and of real conflict such as the Korean War the figures were between a third and a quarter of Soviet ratios. As a result one may assert with justice that the Soviet scientific intelligentsia has not been allowed to contribute to the civilian national economy.

6. Another very damaging factor which applies today in the fSU and which is absent in advanced industrial countries is the separation of functions. The Academy was supposed to occupy itself with "pure" science; the sectoral Institutes with science that should be applicable to the industry it was supposed to serve. These institutes did little or nothing to propagate their results to the factories, which in consequence, remained very much behind western practice. The factories, especially the big ones and those in the Military Industrial Complex, have "technical institutes", but these perform very limited functions. Many of them exist simply to translate the design documentation from the primary design bureaux into manufacturing instructions.

7. In advanced industrial countries every manufacturing firm has a technical department. Nearly all of them keep in touch with current international research, sometimes through a trade research association which provides access to data banks, seminars and cooperative research and contract R&D. The research departments of major firms will spend between 5-10% of their total income on pure and applied research, development and design and testing of new and improved products and processes as well as of materials that they may be using or thinking of using. Often enough pure research absorbs about 10% of that 10%; ie 1% of total income. In Japan even the small firms, say 20th in size of their sector, will spend sums of these magnitudes. In addition to this firms, especially chemicals and other sectors selling advanced products, will spend about 6% of their income on technical support of their products to their distributors and eventual customers.

As an example of the difference I can cite the following example from personal experience. As a research worker in Imperial Chemical Industries, a major producer of polymers and plastics, from 1948 1 became curious about the mathematical and physical basis of the processes by which these materials were turned into products. I was one of the initiators of the theories of flow of molten polymers in channels. These developed into the equations that governed practical processes in screw extruders and moulding machines, which provide the basic transformation operations. The theoretical treatment was widely tested in fully instrumented equipment in our laboratories. My group and the competing group in du Pont's Research Laboratories in Wilmington, Delaware both published widely, gave seminars and consulted with the machine manufacturers and fabrication companies. As a result the equipment was based on good engineering science and, as a result of accurate and continuous control of the governing technical parameters of both design and operation soon produced far better products. The work also placed far more stringent demands on the raw materials which also underwent steady improvement of quality and range of functions. There was and still is a continuous spiral of improvement in products, processes and materials in terms of quality, reliability and cost reduction. It all came about through the methods normal in a market economy of research design and development taking place naturally between direct links between the three areas of the industry: material producers, machine makers and the firms making things from plastics and rubbers.

In the fSU the Institutes doing the work of my group were very remote from industrial realities. In the 1960s when I worked in them, they were well equipped, their people initiated nothing but were intellectually good and followed our work assiduously, but never checked it experimentally for which they were not equipped. Indeed they reproduced it in their journal, ostensibly for others to follow and apply. However the nomograms were small; as a result it was not possible for anyone to read the data. When I enquired I was told that people could come if they wished from the factories, sometimes some thousands of kilometres apart, to study the larger originals. There were no explanatory seminars and the publications required much explanation before an ambitious engineer could apply the concepts. As a result even in 1993 Soviet plastics processing equipment, especially the control systems, are primitive; there is much unnecessary waste of material and the final quality of product is not high. Many factories are restricted to poor east German machinery and many fabricating shops are, as is usual in fSU, located within large factories whose primary skills lie elsewhere and consequently are not well run. There are few skilled specialist processing plants. One in Minsk, Belarus, however, is excellent, professionally managed and, within the limitations of the equipment, absence of computer based processing packages and the restrictions of the available materials, it does an excellent job.

8. The Military Industrial Complex (MIC) undoubtedly is the best of industry in the fSU. I have paid extensive visits to about 50 of its institutes and factories and indeed worked for some months within the MIC (MIC in Russian). Western studies of the weaponry of the Soviet Armed Forces conclude that they respond excellently to the requirements of the Soviet and now Russian Military Doctrine. The designers in the primary Institutes work closely with a very demanding customer that knows exactly what it wants. The overwhelming impression is one of adequate function based on simplicity, reliability and ease of maintenance in adverse field conditions, logical product evolution that uses extensively the components of past models. The designers have done well to surmount the deficiencies noted above of variability of raw materials and components, a very restricted range of engineering materials. This is especially true in electronics, the weakest aspect of weaponry of fSU. As a result designers have turned to ingenious and reliable software.

Let us turn now to the research roles of the leading educational establishments. Those that were “closed” secret establishments working for the military or space agencies served as direct primary institutes doing R&D and concept designs for the military. Many westerners have been allowed to see some of their work. As might be expected from first-class people, given in the past practically unlimited budgets and, by every means imaginable, access to western technology and equipment, and with the stimuli of both patriotic dedication and material privileges, the results are imaginative. Many ideas are very different from those developed elsewhere. But, as we have found in the west, it is not easy to find more than the rare example, that finds profitable application in non-military or non-space applications.

The great educational institutes (VUZ) carry out both teaching and research as do all the best universities in the West. The academic staff are, it goes without saying, as varied in their interests and competence as elsewhere. Until recently they were handicapped by the First Section and by Party interference which affected their careers and access to foreign travel and thus limited contact with their peers abroad.

The traditional approach in the science and engineering faculties of both British and Russian universities has been for academics to undertake both untargeted and applied research, to publish their results and to wait for industrialists to approach them rather than actively to go to seek industrial partners to exploit their work. Many British academics, indeed, have been rather proud of their uncommercial attitudes. This approach has over the past twenty or so years tended to give way to a more hard-headed attitude. This was partly in response to the oft-heard complaint that the British were good at inventing things which were then exploited abroad and often without recompense to the inventor, his university or to the country. Monetary considerations also played a part: since academic salaries lagged significantly behind those of industrial innovators and Government grants to the universities became rather less generous. As a result many universities formed companies to protect, publicise and seek partners in industry to exploit ideas generated within the university. Many academics participate in such schemes and also form their own private companies. As a result they have become quite experienced in seeking out partners both foreign and native to develop their ideas. They have become much less naive, they are not likely to be exploited by rapacious businessmen, but they also know that a good laboratory experiment or an elegant piece of theory does not necessarily lead to profitable commerce. They ensure that they know what their idea can do in practice and what kind of firm may benefit from it and in what way.

Russian academics have much to learn in these respects. Recent experience aimed at helping Russian academics to exploit their work abroad has shown that they share the somewhat naive approach of their British colleagues of twenty and more years ago, but sometimes in somewhat more exaggerated form. For example:

- Hardly any of them have bothered to find out if anyone else has had a similar idea, not even within the same City let alone within the Russian Federation. They certainly have not studied the foreign literature and especially the patent publications; these will have to become more easily available to them.

- Many express the view that their idea is unique and must be valuable but without any thought being given to potential applications. These ideas are sometimes put rather aggressively. To one such person I was forced to retort that his idea had been anticipated more than 40 years ago and that it had been in regular commercial use ever since in Western Europe. It is essential for Russian academics to become more commercially wise and experienced if they are not to be exploited and if their ideas are not simply to remain within the laboratory. It is insufficient to rely on a high degree of education in a physical science, as so many Russians still do.

One of the most striking features of Japanese commercial life and of academics in the leading universities is that the best of them are expert at spotting good science that is worth supporting and of seeing if the work is successful, how it might be exploited to the benefit of a firm. Senior businessmen, unlike their British counterparts, have been prepared to wait for twenty or thirty years before a venture yields a profit. It is not necessary in Japan to become greedy for short term profits to be a successful sponsor for good science and novel technology.

Russian, Soviet & Post Soviet Education In Engineering

A proper engineering curriculum in Russia, as in Britain, started in earnest only in the last two decades of the nineteenth century; before that there were only mathematics and natural sciences. In Britain the work of Sir Isaac Newton and others founded some essentials of mechanical sciences during the second half of the 17th century. In Russia, Peter the Great had started an academy in St Petersburg to which he and Catherine the Great had the wisdom to invite some of the great scientists and mathematicians of western Europe. These included such men as Daniel Bernoulli and his successor Leonhard Euler. They were both mathematicians but made fundamental contributions to applied mathematics, hydrodynamics and other branches of what later became better known as mechanics or engineering science.

Small wonder that engineering in British universities began as applied sciences. Ambitious academics especially in the old universities of Oxford and Cambridge perhaps felt that they would be inferior to their scientific colleagues were they to be teachers of mechanics. After all they would not wish to be compared with their colleagues who were teaching in the Mechanics Institutes which were set up by skilled craftsmen ambitious to become fully fledged engineers.

Thus English engineering education emphasised the theoretical aspects of engineering, leaving practicalities to technicians. The professors were rarely practical people, unlike those from French institutes, who were not only pioneers of engineering science but also put it into practice as designers and project managers of major works such as bridges, docks and harbours as well as of armaments and fortifications.

British graduates might be regarded as excellent mathematical analysts who learned on the job how to apply themselves to the identification and solution of real problems and later still to become engineers in a commercial environment. Until the Second World War it was rare for engineers to be in charge of companies; they were regarded as expert servants of the businessman. What saved them from remaining pure theoreticians, apart from their own determination to succeed, was the insistence of the professional institutions which were founded all through the 19th century, that a professional engineer had to serve a practical apprenticeship under the tutelage of a practising engineer. This in one form or another has lasted down the years till the present day.

The nineteenth and early twentieth century Russian Polytechnics, such as those of Kiev[2] and St Petersburg, owed much to German models of the Technical High Schools founded in the middle of the century. These, like the British, were theoretically rather than practically based. Their graduates completed their education by well worked out practical training in the firms that employed them. German industry from Prussia to this day insists that they will pay for this training without State subsidy - unlike the British industries which are reluctant to train at their own expense, partly for fear of losing trained people to competitors, and to decide what the newly joined graduate needs to assist the firm and his career to prosper.

Unfortunately, in copying the German educational model, the Russians and later the soviets did not follow up with the practical engineering training given in German

[2] From which my father graduated in 1912.

firms. Soviet engineering is even today characterised by two major defects of which that is one. The second is the extremely large number of "specialities" which provide a narrow education, in spite of or perhaps because of the large number of subjects studied during the diploma course.

There are, by common consent, about 350 different specialities in engineering; each student studying over 5 years about 40 subjects. These courses make for a hurried study of facts and mathematical tools rather than a deep understanding of principles which provides the graduate with an ability to work in a wide range of engineering sectors and activities. Nowadays such graduates, like those from some, rather second rank, American and British institutions, find it very hard to adapt themselves to changing demands of employment when industries in which they were trained decline and their firms go out of business. In Britain there are fewer specialised courses at first degree level in engineering, in which students take no more than eight basic subjects.

The Russians also tend to boast of the high theoretical qualifications of their graduates. This is often true and indeed the best of them are very bright intellectually. Given a job requiring good analysis and mathematical skills to solve a problem there are none better. They compare with the best from Cambridge, England and MIT in USA.

However, such skills are not enough to become a successful engineer in industry except perhaps in research. Even in England, where they grew up in a successful market economy, graduates with first class honours degrees from the best universities often prove to be inadequate in industry. For many years, British industrialists have complained about such inadequacies of even our best graduates. Students themselves ask their teachers why they have to learn so much theory and what is its relevance. The answers have not been satisfactory. It is not enough to impose a programme of education that is rigorous and therefore challenging to the mind even in a discipline fundamental to engineering. Much theoretical engineering science has degenerated to mathematical exercises in sharply divided subjects which appear to have little to do with each other and do not relate to the real world outside. The courses have become congealed, over the years, and are often repeated year after year by the lecturers. Students become easily bored and lose interest.

Professors may argue that they became excellent teachers and fruitful researchers on such a diet, why should not present day students? There are some relevant answers, apart from the criticism of the ultimate customers, ie the students and their future employers. By definition such professors were outstanding students but a duty is owed to others less well gifted. Secondly, such courses predispose graduates toward research and away from manufacturing and other jobs. Not more than a small proportion of graduates is needed in research and even in creative design. But if such work is regarded as the most prestigious then the rest will become starved of the best engineers and will deteriorate in quality as a result. This is what happened over several decades in USA and UK. As a result both countries received sharp lessons both from the Germans and more recently from the Japanese. The translation of good research requires the attention of the best graduates as well as those less gifted to work under their leadership. But best requires redefining. Not only must the best have a deep understanding of basics but he must also be able to identify real problems and to contribute to their solution. When I joined ICI in 1948 I was told by the Research Director, "When you start work with us we will forget that you are a graduate, after six months we will also forget that you are an engineer. To succeed with us, you will have to solve

problems whether they require an understanding of physics, chemistry, engineering, finance, organisation or human relations." A wise attitude, nowadays widely demanded, which requires changes in engineering education.

As a result fundamental changes have been taking place, even in the most traditional faculties of some of the oldest universities in Great Britain as well as in America, Canada and Australia. Briefly explained, the new courses are structured around problems which require students to learn and apply simultaneously disciplines and tools which were previously taught as separate subjects. They have to decide for themselves what they need to learn in order to achieve a result. They work, not alone, but in small groups to which are attached academic teachers and also experienced engineers from industry. There is less didactic instruction, teachers act more as tutors who prompt the students to learn, to find the appropriate disciplines. We are moving toward group learning, problem based and student based rather than the old single subject instruction on the blackboard, although that still plays a significant role. For example in my faculty we group in one block, spread over two years, a set of problems embracing materials, manufacturing design and management of engineering operations including finance and team work. Another block deals with vibration, heat transfer, fluid flow and materials, aimed at the total design of a gas turbine auxiliary power unit. Students are required to undertake both blocks amongst other courses and laboratory experiments which now become much more than the old routine exercises.

In the final two years the students progress to more complex and demanding projects. Some involve design of a product and/or a process; some may be directed toward industrial management. In such ways students are being educated in a combination of traditional engineering science closely linked with engineering practice and within a commercial context of a market economy.

In some British universities the engineering courses provide common courses over the first two or three years and only then offer courses in chemical, mechanical, civil or electrical engineering. Some institutes in Switzerland, Sweden, Vienna and Budapest are very similar.

The education of British engineering students does not end in the university or with their first degree. Most universities organise various ways of involving industry in education and training of students both before they graduate and afterwards. They all require periods of structured experience in industry. Those for students are closely and jointly supervised by industrial managers and by academics. Postgraduate training is supervised by the professional engineering institutions working under the aegis of the Engineering Council. A certificate of professional competence is rewarded after such industrial training and a viva voce examination.

In such ways British engineering students are introduced during their first degree courses to the ways that they will actually work in industry. They become polyvalent, with the ability to work in teams with people who have studied other aspects of engineering work in greater depth. They change their roles from time to time, say from studying the market and specific requirements of design for a customer, to manufacturing implications, cost and resource management, quality assurance, the integration of process design and evolution, presenting a business plan to a bank etc. They learn from each other and thus easily fit into the multi-disciplinary teams used for decades in the western chemical industries as well as the so-called "simultaneous engineering" teams associated with Japanese mechanical engineering.

These changes have been found necessary even in USA and UK with their sophisticated, truly advanced and successful technical economies. These changes are required much more urgently in the fSU. This is especially true since the methods of the old Command Economy are not such as to provide a good practical experience for a graduate to become the equal of his foreign colleagues in managing a fully competitive technically based firm in any branch of the economy. Even worse than the old traditionalists in Britain, the Russian boasts and emphasis on high theoretical education blind them to their deficiencies and the real intellectual needs of a successful engineer in industry. One does not need a degree in quantum mechanics to manage a nuclear power plant any more than a knowledge of the location of the double bond fits someone to run a plastics factory.

The Function Of Design

The Command Economy required workers to make, inspectors to reject, the factory to correct deficiencies if possible. Consequently the reject rate was and still is several times higher than in AICs. The waste of time, labour, material and other resources is staggering. The system provides factory managers with no means or incentive to reduce these losses and to sell goods that provide “value for money”; a term that is meaningless in a sellers’ market where buyers are practically without the means of choosing between competing products. They have had no means of judging and applying such criteria. Small wonder that currently imported goods, whether genuinely superior or not, are preferred.

In a market economy, the concept of a product starts with a detailed appreciation of what people might be persuaded to buy. This concept includes, of course, the functions it must perform. Other matters include, safety in use, how it looks, how easy it is for the range of customers to operate it in a range of circumstances, how it is to be maintained, supported and delivered in good condition to the ultimate user. The design team must therefore have excellent input from the marketplace not only to assess the above factors, but the potential competitiveness of the new product. The team will study what else is on sale, how else the functions of the proposed product are being achieved, the price and cost of competing products, and factors such as reliability, life expectancy and soon. A design team will therefore include people who have regular contact with the marketplace, stylists, cost accountant, buyers, materials and manufacturing engineers as well as having access to others such as environmental, ecological, packaging and distribution executives and engineers.

It is immediately obvious from this short description that the work of the design team embraces very much more than questions of the cost and methods of making the product. It is essential for the starting point to be the market place, the ultimate user and the distribution chain; from those points one works backward into the factory. Naturally the whole process is interactive not linear. That is why one works with multi-disciplinary design teams which sit together and consider every aspect simultaneously. The Japanese call the process “Simultaneous Engineering”. This process took the place of the old ways which started from the question “What can we make efficiently in our factory?” and developed products from that standpoint.

Words do have an effect on the way people think and then act. The Russian term for what in English we call design - which in Russian conveys the aesthetic aspect

only - is “The Constructor’s Bureau.” It gives the impression that it is all about making things. Everything else is left out.

British factories which managed their business on those lines have long ago gone out of business into bankruptcy. Those factories used to promote themselves in that way. Their salesmen used to distribute literature with photographs of gleaming machine shops, rows of men and girls standing like soldiers at drawing boards as if that was the wealth and competitive advantage of the firm. Russian factories, sadly, still work on that principle. The politicians, military economists and factory staff still think of the manufacturing part as the core of the business, which must neither be reorganised, or even put to other uses, such as increasing the output of consumer goods. Otherwise as one article in Voennyy Ekonomicheskiy Zhurnal in 1993 put it “it will lead to the destruction of our national wealth”.

The Russians consider that a major strength lies in the skills of their work force. But the analysis of this ‘strength’ must go deeper. Those skills are craft skills; traditionally Russian craftsmen have been superb; for example from the 18th century onward take the Imperial porcelain factories, the jewellery workshops, some textiles, woodwork. The same was true in England, in furniture, silverware as well as in the Russian examples. The key fact is that in both countries those craft skills and businesses were not translated into high quality mass production industries. Only Rolls Royce of all the British car makers between 1900 and 1914 made a profit; the automobile business in UK has for decades been dominated by foreign firms.

In Britain the changes came after the Second World War and are still in progress, much of it due to the presence of world class foreign firms. In fSU the change has not yet happened.

Consumer goods, even the best made in the MIC, are well below the quality required in the markets of the advanced industrialise countries (AIC). Those that do sell abroad are usually made in factories whose total technology has been bought abroad. The designs, especially in aesthetics and finish, have also been produced abroad. In the Command Economy goods for ordinary people were designed by engineers who basically thought outward from the factory. Recently the MIC has tried to produce more consumer goods.

Sometimes a Ministry would decree that products should be designed and made in a factory without any appropriate design, market or manufacturing skills. sometimes a factory director desperate for an income will try with his own team. Occasionally they try to copy a foreign product, analysing it in detail and adapting the design to what components and materials they have available within the republic (since inter-republican trade is handicapped by the failure of the bank clearing system). Sometimes they try to “improve” on the foreign design. Such products are rarely good enough, certainly not for export. A coffee grinder from a weapons factory in St Petersburg was studied in the Consumer Association’s Laboratory in England. They found it was electrically and mechanically unsafe. It could have severed a finger from a small child who might have played with it. Another example: Kokoshin, a deputy Minister of Defence responsible for the MIC, cited an aircraft factory which failed after many years to produce a satisfactory machine to pack macaroni. In the fSU there is an arrogance which assumes that because the engineers are “highly qualified” they can turn their hands to anything. This is another Soviet illusion and a dangerous one. A basic reason for such failures lies in the absence of specific experience and understanding of the evolution

of that product and what it has to do. Had I, with years of design and development experience, been told to do that job I would have used some of my precious dollars and engaged an experienced Italian engineer to lead a section of my design office in Moscow or Coventry. The chances of success would have been much better.

All over the fSU illusions prevent progress. These are frequently summarised in the following phrase, which saddens and bores me and my colleagues who are very involved in trying to improve the manufacturing base of the fSU.

> *"We have very cheap labour, skilled workers, highly qualified engineers and very high technology, a big market, so why does the west not invest in our factories?"*

To summarise the answers, most of which have been discussed above -

1. Low wages do not provide low cost production unless it is effectively used. In fSU it is inefficiently deployed.

2. The skills are craft skills, not adapted to high quality, mass production.

3. The engineers may be well qualified in theoretical aspects; their education, experience and attitudes are not appropriate to work in a highly competitive market economy and they find it extremely difficult to learn how to adapt themselves to our circumstances.

4. "Technology" is a term often used, little understood. In Russia it is used to carry every meaning from design, product performance and manufacturing processes to management. The fSU lags well behind the AICs in every one of these aspects which are applicable to civilian industrial applications.

5. The market may be big, but it is disorientated, operates under arbitrary, frequently changed laws governing enterprise, subject to political risk, to criminality, confiscation, suspicions of foreigners and their intentions. Foreign potential investors are themselves short of free capital for investments and have many opportunities for less risky, more certain and profitable opportunities elsewhere.

In any event, most of the factories are in Western terms bankrupt. They are mostly "value subtractors", ie the value of their products on the open market is lower than the sales value of the raw materials, components and utilities that they use - no one buys machine tools and buildings unless they can yield an income and a profit. Otherwise they are sterile assets. Unless the business competence of the factories is improved rapidly, it would be better for them to go into liquidation and for those assets to be redistributed to competent people who can exploit them in a profitable business in other ways.

6. Joint ventures, like privatisation, are fashionable words in fSU. But they are unnecessary for some time to come. It should be realised that it is far more practical to do business with a Western company if both parties collaborate in a normal, direct manner as between, say, customer and buyer, initially without equity participation.

Russians are bemused by the structures of mergers, joint companies, stock and commodity markets which they think are the basis of an efficient market economy.

They overlook the simple things at enterprise level that actually are responsible for a thriving economy; the rest is a superstructure which has a role but cannot be useful until there are competent businessmen, industrial managers, good design and manufacturing engineers etc.

What Is The Way Forward?

What has to be done to improve matters? What is the national engineering philosophy toward which this article is leading? What attitudes and instincts have to be guarded against and unlearned and expunged from the mind of people who have grown up in the Command Economy?

One might start with a quotation from Adam Smith - “The purpose of production is consumption”. To enlarge the point, the objectives of applied science and engineering must be utility in the service of mankind, society and the individual.

A second point is applicable everywhere. Always try to promote action, thought and initiative at the working levels, who must be encouraged to develop direct links with people they need to work with. Do not be tempted to recreate central command economy-style, vertical links.

You do not need centralised systems for technical, commercial or foreign market information, supply and sale of goods, materials, components, labour, education or training. Quality is not determined by national standards or institutions, although they have a part to play. It is determined between competent buyers and severs and independent test laboratories openly reporting to the people.

Do not try to impose a unified structure for education, training or organisation from the top down to enterprises, schools, universities etc. Let them experiment with their own ideas related to local needs, which will be different in different sectors of work and in location.

In Research

Therefore - there must be a balance between abstract science and research and its utilisation. Most of us are not wealthy enough to take the view that scientific activity is an art form to be indulged in by masses of intellectuals for their own prestige at the expense of society. The Japanese wealth, as did that of West Germany, came from the excellence of application of education and science to commercial purposes. From that wealth, which was distributed in incomes and taxation, came the funds to support the infrastructure, health and welfare, culture and pure science.

A country with a bankrupt economy, badly fed and housed people in poor health can no more afford too much pure intellectual work than it can stand too much expenditure on defence. A young man in Kiev told me that just because Ukraine was in a bad way they had to keep the Black Sea Fleet in order to command international respect! He is wrong. So are some British people who prefer Nobel Prize winners to a positive balance of payments which must rely on large quantities of high value, competitive manufactured goods.

Invite international commissions to review the work of research Institutes, including those of the Academies of Science, with a view to getting better value for money from the people and from the institutes themselves. Encourage such places to learn how to exploit good work commercially and invite competent people from abroad to help them to do this profitably to the institutes and to individuals. Do it at Institute level; forget any temptation to set up central Institutions to serve them.

In Education

Revise the curricula and methods of teaching in science and engineering away from pure theory and engineering science toward a combination of science with its application in practice and within a commercial environment. Help students to learn through solving real problems, with an inter-disciplinary approach including commercial aspects.

Reduce drastically the number of narrow courses, help students to become versatile, to be able to work throughout their careers in a variety of sectors. Abolish the word "Specialist" and substitute an ability to become a generalist well grounded in basics.

Link university teaching with industrial experience, especially in an AIC**,** both at diploma level and at postgraduate level. Look at the British use of sandwich courses and other ways of intimately linking education with industry - look at the training on the spot used by German and Japanese firms for recent university graduates and of technicians. Education and training form a seamless whole; schools, universities and the work place must all interact and contribute to the discussion of what is needed for people to perform well in different roles.

Do not be tempted to place business education and training primarily in a Business school; they have a role but the best place to learn about practice and management is not a classroom but on the spot.

Do not confuse becoming a good industrial performer or businessman with the acquisition of skills to handle the tools, say, of accountancy.

In Industry

Create a business orientation in the top management.

Rapidly identify strengths and exploit them set up separate business groups for major product groups, learn to work as a team.

Main areas of improvement must be:

Commercial: in market intelligence, negotiation, selling, pricing and product support. Learn how to promote your products through literature, exhibitions, seminars etc. Identify new business opportunities. For some factories these will be in supply of components, for others finished goods, for others consider production and other industrial equipment and for others again, turn key plant to substitute for imports. Always aim at equalling or improving on foreign standards.

Technical: in Design, for the market, provision of value for money, quality assurance through product and process system design and operation, purchasing and management of the supplier network.

Factory Management: Think smaller - grandiose factories will tend to be inefficient. Study mass and material balances, energy balance, identification of prime areas of inefficient use of labour and equipment, layout and materials handling improvements, safety, environmental and welfare issues, stimulation and motivation of work force, reduction of reject rates, introduction of proper cost controls and production flow.

Proceed through business cells to product and process evolution.

Identify weaknesses, improve what is capable of being rescued, close the rest. Get rid of non-core skilled areas, set them up as private firms, perhaps with those of other local factories and local chambers of commerce.

Institute training programmes for everyone, identify the strengths and weaknesses of each person who will stay in the firm and also identify new jobs for those who will leave and provide appropriate training for them. Use the State credits to provide a breathing space to allow for this.

Find appropriate foreign experts to act as local tutors in the enterprise, be active in seeking foreign help, licences, partners etc.

Learn to welcome and manage change. Conversion of MIC and improving the economy in the first place needs to be done at the enterprise level, by changing the mentality; this comes before re-equipment and before privatisation. Very little money is needed. Hopefully once the place is profitable it can support loans from its own profits. In so doing it will become more attractive for foreign investments.

Go abroad only when you have done your desk research at home. Study other factories and manufacturing enterprises only when you have acquired sufficient experience to be able to appreciate what you are being shown and also to understand the reasons behind the success - or otherwise - of the firm.

Stay in touch with affairs in AICs; make friends and keep them. In hard times ask them, for example, to send you surplus literature on every aspect of your work.

Turn the MIC into businesses, find ways of turning the factories into businesses with a factory rather than being just manufacturers. Bring in the design skills from the MoD Institutes by transferring a hard core of people to act as tutors. Do the same with the experienced negotiators from the old Import-Export Ministries.

Realise that the MIC can and must be improved and converted; the idea of keeping them as they are to support future military needs is folly. By my estimates a well run MIC could produce over 7 times more civilian goods than it did in 1988, surely enough for the Armed Forces for the national economy and for export and employ quite a few of its people whilst using the State credits to retrain those who should go and do other things than produce in the present factories. Small service and manufacturing units are badly needed; craftsmen and engineers can be trained to become owner managers.

Stop hankering after selling arms abroad to save the country.

Disclaimer

The views expressed are those of the
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Cinderella Becomes A Princess

Instructive Stories

Conventional wisdom in the main advanced industrial countries (AIC) asserts that industrial development starts with scientific and engineering research. Only research can produce new products and advanced production processes and these are the only route to an industrially competitive economy. This argument postulates the familiar cycle of the birth, life, decline and eventual death of a product. The product itself is continuously changed in answer to market wants and needs (not necessarily the same thing) and to competitive challenges. Its costs are driven down by process improvements. This is the competitive way in AIC.

This concept of industrial development integrates science, engineering, design and marketing under the control of the entrepreneurial company and has served the economies of the AIC very well. It is probably unrivalled and irreplaceable for the firms involved in complex finished products such as automobiles, aircraft, measuring and control systems, chemical plant and other production equipment systems. These firms can conveniently be called "Main equipment producers" (MEP). Once the industrial sectors of competing countries have reached a comparable and advanced level, there is no other way for their MEP to retain their position. But it has to be noted that "science" and even engineering research, although integrated into the firm's operations and intellectual effort, play but a small role in these processes. The success of a MEP firm depends upon its ability to translate research into saleable, profitable goods and services. This requires a management system which is flexible, dynamic and highly professional. It must be able to appreciate and to respond to the changes in technical, commercial, financial and social cultures that affect business. The board sets the strategy of the firm, but above all it must practise and instil into all its people the culture of doing everything properly - "perfect first time and every time". Engineers who have good ideas but are indifferent to their implementation and to the rigour of the details are not engineers. They cannot rise above being merely "men with ideas"; these ideas, for lack of attention in their essentials, will not succeed.

The life cycle of products and processes has been much studied, discussed and written about, especially by management consultants, Business Schools and theoreticians and self-styled intellectuals. This is perfectly understandable. The innovation processes in applied natural sciences, engineering and their industrial manifestations are a part of the whole spectrum of the curiosity and intellectual processes of mankind, in the arts as well as in science. It is not unnatural for them to have received so much attention. Intellectuals like to study intellectuals in other fields even if they have no personal experience of such work and therefore cannot do it. We have to remember the aphorism, "he who can, does, he who cannot teaches, and if he cannot teach he writes about it, and if he is a bad journalist he becomes the Minister." However it seems that this attention may in certain circumstances absorb the full attention of intelligent people who may have the best interests of their industry, economy and country at heart. In so doing, "science" and research become almost an article of religious faith which requires ritual expenditure of money and people on a vast scale and often without analysis of any benefits that might flow therefrom. It seems 'obvious' that the more that is spent on support for scientists and researchers the better will be the economy of the country. People who advocate this policy overlook the simple fact that much more is needed

to satisfy those interests than an emphasis on 'science', on research and on development as it is normally understood. Not only is there little correlation between science and economic wealth but even if there were, one has to remember an old axiom amongst statisticians - "Correlation does not necessarily imply causation". A Danish statistician showed some years ago a correlation between the arrival of storks for their nesting period with a rise in the human birth rate.

Scientific effort by itself will not automatically provide wealth. Wealth is created by the efforts of people who have devoted themselves successfully to the processes mentioned above. Both good science and good industrial performance depend on a common culture which allows them to interact. For example, Japanese science and Japanese laboratory instrumentation are both excellent; the scientists ask for advanced instruments and the producers respond. It is an upward spiral; each advance is based upon the last contribution from their partner. Once a certain level of wealth in an organisation or a nation is achieved then a corresponding level of expenditure on science and on untargeted research can be afforded.

Support for untargeted research in a sense is like support for a leisure class. It has first to be afforded and earned. Three years ago I asked the Scientific Adviser to the Prime Minister of Japan how they managed to persuade the electorate to pay for so much research into, for example, radio astronomy. He replied, "We are now so rich that we can afford to treat pure science as an art form and as part of our contribution to world culture. The Japanese people are curious about the origins of the human race and of our world and they need no encouragement to vote money for such work." There is hardly another country in the world where such an answer could be sincerely produced. And there is not another country which could afford it. (There is no space here to describe the ways that Japan has achieved its position in the world not only of pure science but in its application within the economy.)

Like much of the life of the leisured classes, much of the research in every country, especially that funded by Governments, is economically unproductive. This is because, unlike work done in private firms such as the MEP, the Government systems, for example in Great Britain and in Russia, do not evaluate the work for which they provide funds. Pure research is a tax on the nation rather than its life support system. It is therefore up to those who run the affairs of the nation to see that Government funding for research is properly accounted for and subject to professional and objective evaluation.

When the economy of a country is run down and everything requires massive investment in order to bring to a satisfactory condition the condition of the people, the infrastructure and indeed the very means of creating wealth, then we have to make drastic choices, to invest what resources we have into the most urgent channels in order to achieve those objectives. Support for a leisured class, whether scientific or absentee landowners, cannot be high on the agenda. This is the case in the fSU and was the case after the Second World War in Japan and western Europe as well as in the countries which we will examine now.

The Industrial Rise Of The Four Dragons

There are other ways than a reliance on "science" to raise the performance of a firm and also of a nation, as can be seen from a study of the rise of the newly emerging countries, for example South Korea, Taiwan, Hongkong and Singapore. More recently their example has been followed by Thailand, Malaysia, Indonesia and the

Republic of China itself. Until well after the end of the Second World War these countries were in every way third world; emerging from a colonial past, and years of devastation and military occupation, with a low standard of living, peasants eking out a subsistence living, cottage industries, a poor standard of education and poor health conditions. They came very late into the world of industrial development. Now they are vibrant economies, challenging Japan and supplying advanced and complex products, some of which are now of their own design, as well as electronic components of world class. Science played only a small role and then only far down the road of industrial development.

Their industrial development started with the manufacture of components for foreign MEP firms. Working as sub-contractors helped them to understand the requirements of world class MEPs, using their drawings, subjected to their quality assurance systems, having to deliver to rigorous schedules and maintaining consistent prices. Initially many firms had to import special components and materials unavailable locally. They offer low cost as well as manufacture and then assembly of foreign designed goods through dedicated factory cultures. They learn from their partners modern product design and production processes and sooner or later commercial skills including overseas marketing. They use these lessons and experience to their own purposes. Simultaneously with this industrial development, based upon mundane rather than innovative and romantic development, these countries developed an education system which provides a work force of almost 100% literacy as well as fully competitive mathematicians, computer programmers, scientists and engineers. In this way the local firms progressed from sub contractors to innovative performers in their own right on the world stage. Local firms both buy and sell licences and also invest in overseas acquisitions in AICs. This is especially true in electronics. Their exports are largely directed to USA but also to Japan.

It is essential when building a competence in new fields to work with advanced and intelligent customers from whom one can learn; but such local firms nowadays also sell to less advanced countries. The best firms in these countries of the Pacific Rim have the latest production equipment; the factories are often run by people, from several nations, with an up to date commercial, technical and operational culture. As a result they can attract investment from international as well as local sources. They form not only essential partners for the MEPs in AICs but also present a growing threat to the smaller and sub-contracting companies in AICs in Japan as well as western Europe and USA. They are already respected competitors to Japan, of which Korea was a colony until 1945 and from which it is determined to take some markets.

Science & The FSU

Official figures show that 70% of all qualified scientists and engineers and of the total expenditure on research and development in the USSR was devoted to military purposes. Experienced western engineers give a high assessment to the functional performance of the general run of Soviet military hardware and of the computer driven command systems that belong with them. However, even the hardware itself suffers from severe weaknesses: much of the equipment is considered to be hazardous to their own soldiers; so much so that the Bundeswehr rejected most of the equipment that came to them with the unification of the Volksarmee. Secondly, the weakest aspects are exactly those that are commonly called "high technology", namely electronics and electrical hardware. Thirdly and most important in the

context of this article is that excellent scientific and basic engineering concepts are translated very badly into actual hardware. This is the fault of the Command system itself. It dooms to failure the best efforts of highly intelligent and professional engineers who may have set out with high ideals and intentions. The military industrial complex (MIC) itself is the best of the old soviet industry and sadly its weaknesses are not recognised by the present governmental leadership. There is space here only to mention the key points; to analyse them in detail takes a lot of paper. Separation of functions and therefore of responsibility, excessive size of research, design and manufacturing organisations, an absence of a proper culture of industrial management even in production, general poor standard and specification of engineering materials, a lack of concern for cost reduction and a lack of understanding especially at the factory level of relations with customers, in modern parlance "marketing". The last two defects are shared with the defence industries of the west, which is why so many of them in the West were simply closed rather than adapted to civilian purposes.

As a result the MIC is basically unprofitable, financially bankrupt, has contributed largely to the destruction of local ecology. It produced almost all the electronics and household equipment made in USSR, but its inadequate performance in design and manufacture led to poor quality, low reliability and low value for money. As a result the fSU is flooded with foreign engineered products which sell at higher prices than they command in their home territories.

It is essential that the MIC regains its home market and begins to sell civilian products abroad, not just to the third world. Russia cannot continue to survive by selling raw materials and importing technology on the present scale. Basic, raw materials continue to occupy about 70% of all Russian exports; engineered products only 2.5%. The figures show that engineered products occupy about 30% of world trade.

A drive to achieve better export figures for technical, civilian products requires no "science" nor research. Improved industrial performance depends upon: better understanding of market requirements, better and more responsive design, attention to quality in its totality, attention to detail, a proper culture of factory management, understanding of how to serve distributors, agents and customers, a proper humility and an understanding of how a competitive market economy works.

Science and research has had little useful impact on the national life and economy of the USSR and of Russia since 1985. Its extraction industries, air, rail and pipeline transport systems are inefficient and dangerous. A comparison between the Soviet and Alaskan oil pipelines is instructive. The Soviet specification for steel pipes is the same as those of the West but the losses of oil through breakages is many times higher. This is due to: the use of inappropriate welding techniques which work well in ideal, factory conditions but not in the field; inadequate internal and external anti-corrosion and other protection coatings and coverings; careless, totally inadequate systems of supporting the pipes, especially in areas subject to shifting soil and to earthquakes. The demands for speed and the separation of responsibilities which are typical of soviet and post-soviet command managements bear a heavy responsibility for failures and the losses to the economy, human life and damage to the environment.

Lada cars provide another instructive lesson. The basic design of the car and factory that makes it are Italian. Two things limit its sale on western markets - failure to keep up with competition in design features and its low quality of

manufacture. Lada UK, the importers, stated in December 1995 that the carburettors usually contain swarf and other metal residues from cutting operations in the factory; as a result Lada UK routinely give them to a British specialist firm to bring them to an operational standard. Secondly, the paintwork so often contains foreign bodies mixed with the paint that many cars have to be stripped and 23 hours spent in repainting. Regularly, non-essential components fall off the car. As a result British customers are turning to competitors away from Lada.

One sees no contribution of decades of soviet research in the design and performance of vehicles. There are many research papers that claim to solve many advanced problems, for example in the 'ride' and suspension system and in multi wheel steering. Such papers may be fun to write but they are irrelevant when compared with the fact that the performance and manufactured quality of existing vehicles are so poor. Is it not easier and more fun to write papers about future advances than to tackle present problems? The tragedy for the Russians is that the future never comes. To produce another example, the fuel efficiency of engines in current production for cars and aircraft is far below that of the foreign competition. Russian aero engines have a much shorter life between major overhauls.

My own observation of the "clean rooms" in weapons' electronics factories of the fSU is that they are a sham; this lack contributes to the high rejection rate of PCBs and other components. In comparison, for example, Toshiba report that every 1% of reworked rejects costs the equivalent of 5% of net profit; their reject rates of TV sets in Britain is now down to about 2%; general Directors in fSU factories report figures about an order of magnitude higher. Western agricultural specialists report that soviet seed, farming methods and equipment do not accord with the conditions on the farms that they have examined and, in some cases, run. When they import, for example, British seed and equipment and apply British husbandry techniques the output has risen by more than 3 times in two seasons. What were the famed Institutes of Biology etc in the USSR doing all those years?

The standard of building, furniture and household and office equipment for ordinary people, in contrast to that of the 'high-ups' and for foreigners, of the telephone system as well as of toilets and the basic utilities is not that of an advanced country. These aspects of life reflect of course the under investment in them for decades - due to the over-investment in the military but also in other things deemed to be prestigious such as "science", the arts and space which was of course primarily intended for military purposes. But they also fail to demonstrate any contribution from "science" and research. They remain of a low standard. To bring them up to west European standards, as the Russian people deserve, requires not science but the devoted attention of good engineers and craftsmen led by good managers with sensible directives. Experience in Britain after 1945 suggests that the job may take a very long time. British science was then, as it is now, of world class but much of its manufacturing industry was uncompetitive for very similar reasons that we observe in Russia today; these are largely those of organisation and mentality of management and work force rather than of equipment and investment.

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A Practical Programme For The Reconstruction Of Russian Defence Factories

Theodore Levitt, Founder of the Harvard Business School developed the concept of "marketing", which Levitt defined as *"identifying, satisfying and stimulating the needs and wants of the customers".* Marketing therefore becomes the basis of a business strategy for a firm. This approach to business was very different from that of the engineer who moved in a closed world of the manufacturing workshop. His skills were devoted to making the product as best he could, as cheaply and as quickly as possible. It was usually someone else's job to sell the goods and to beat the competition. The need to make things at the lowest possible cost commensurate with competitive performance led to two consequences.

1. **Standardisation of product to allow repetitive processes of manufacture on the same equipment**. This is one basis for the idea of "economy of scale". It produces more throughput, income and possibly profit for the same investment in equipment and other fixed costs of the factory. Perhaps the most famous example was Henry Ford's dictum "You can have the car in any colour provided it is black". People soon got bored with having the same car as everyone else and one which was dictated by the factory's stylists or worse, by the wife of the president of the company. As is well known the American car industry had to learn quite quickly how to produce cars with a huge range of detailed choices in engine size, colour, interior fittings and even body styles. Competition led to variety and hence to choice. Consumers learned to choose and to examine a wide range of attributes of competing products partly through the Consumer Movement which started in USA and became prominent in the 1950s. Various specialised magazines reported the thorough testing carried out in its own laboratories. Safety of products became a feature, especially following Ralph Nader's seminal book *"Unsafe At Any Speed"* which concerned the American car industry.

Standardisation of product and dedicated processing equipment are cost efficient provided that the product range is likely to remain fundamentally unchanged over a long period. This has to be long enough to make enough profit to survive, to pay for the dedicated tools and fixtures, to amortise the equipment, to replace it with new equipment and indeed to create a new layout for the factory itself when the product radically changes. But ultimately, it makes for stultification of development and competitiveness. Much effort has gone into allowing modern industrial processes to produce varied products cheaply.

Perhaps the earliest example of such a dedicated production system was invented by Sir Mark Isambard Brunel and made by Henry Maudsley at the turn of the 18th/19th centuries. The huge increase in ships brought about by the wars against the French led, amongst other things, to a massive demand for wooden blocks for hauling the sails. Brunel created a range of what today would be called specialist machine tools, each performing only one operation. The work piece was then transferred by hand for the next operation. The process was used in Portsmouth Dockyard and provided blocks of excellent quality, far more quickly and cheaply than the old hand methods. Of course, when the demand for blocks waned and disappeared, so did the need for Brunel's production machines. No amount of ingenuity could provide them with economical, alternative use. The equipment is on show in the Naval Museum in Portsmouth to this day.

2. **Specialisation of manufacture within a firm**. This concentrates the skills of the firm on the manufacturing technology and on its understanding of the materials processed and stimulates its evolution in a way that is not so easy to attain if the process is located within a general factory with a wide range of skills. The concentration of skills to a core skill leads to such firms becoming sub-contractors providing components to the makers and designers of main equipment. The business revolves around a keen understanding of the customers' precise needs and the ability to respond with the best answer to them. Such suppliers work closely with the customers' design and purchasing staff, providing advice as to the best solution. Thus a firm with skills in plastics moulding would not venture lightly into die casting metals or glass. Furthermore such a firm might restrict its market to supplying the car assembly business, making valves for aerosol sprays, or micro engineering components requiring ultra fine tolerances. But a firm specialising in metal cans for packaging might contemplate broadening into providing packs of other materials through its detailed understanding of the packaging needs of a wide range of customers. It might then acquire another firm working, say, in paper or plastics packaging which had the necessary marketing, technical and production skills. It would be folly for a firm making plastics components for the car or aircraft industry to venture into a new market for plastics packaging merely on the basis of its knowledge of plastics processing technology without the marketing knowledge and reputation. A firm making winding machinery for paper and plastics film and sheet is unlikely to make equipment that may look similar and which it could make for other industries. The same is true for wood working equipment which looks very similar to metal cutting machinery; probably the best suppliers of the former are to be found in north Italy and they do not venture outside their niche. Restriction of activity by one firm to a type of market is very common.

A major holding company will group its subsidiaries according to the markets they serve rather than by the material they process or by type of product or manufacturing process. This provides the essential dedication to, and understanding of, customers' requirements and culture.

Commercial Understanding

Each kind of business is a closed, rather introspective world with its own language and culture; it takes a long time for an outside firm to understand its needs, the way it works and the outlook of its people; much longer than to acquire a technology new to the outsider. Selling instruments to a hospital, a university laboratory or to a power station requires detailed knowledge of each sphere; so a firm making instruments which can be applied to each requires to set up specialist sales teams for each. This leads to diversification in detail for each application and therefore to dedicated designers who specialise in particular products for particular customers and even in a limited range of components. The logic leads ultimately to the creation of separate businesses for each market sector served by the company.

One English firm which specialises in plastics moulding has a separate division for supply of the taps for delivering beer in Public Houses. Beer often is supplied by the breweries in barrels and must be delivered to the counter in the bar under pressure. There are many kinds of beer and they often require different conditions of delivery to produce the best results in the glass. The British, like the Belgian, beer drinker is very fussy and will discourse for hours on the merits and faults of particular publicans in the way they keep their beer. The taps made by this company have undergone development in detail over thirty years and the firm has an unrivalled position in their supply not only in Great Britain. They provide an excellent example of identifying a niche for themselves and setting out to excel in its

satisfaction. Even such a mundane product deserves specialist attention, collaboration between the customer, sales force, design and manufacturing engineers. Indeed it has involved not just plastics processing skills but some quite interesting hydrodynamics.

Specialist commercial expertise is at least as hard, as expensive and probably takes longer, to acquire than technical and production knowledge.

The Problems Of Defence Industries Facing Significant, Long-Term Reduction Of Demand

The main defence industries of the advanced industrial countries are in America, Britain and France. The industry is conventionally organised into:

1. Main contractors. These are self-contained commercial entities with their own marketing, R&D, design, manufacturing, purchasing, financial, marketing, sales and customer support sections. Their own manufacturing is mostly that of assembly as well as making the main components such as wings, hulls of tanks and warships.

2. Specialist suppliers of assemblies such as engines which form parts of the main equipment. These will also have their own complete range of commercial, technical and financial services. They will be organised to supply their products to civilian customers as well as their military ones. These are often separated for reasons of differing customer culture, their "way of working", as explained above. Another example will be a separate division supplying wheels, brakes and tyres for aircraft, both civil and military, within a firm supplying tyres for automobiles. Boeing, Lockheed, Aerospatiale and British Aerospace make military as well as civil aircraft but in separate divisions which will deal separately and independently with the same suppliers to both.

3. In turn these firms as well as the prime contractors will buy a wide range of detailed products and services from specialist suppliers whose products are applicable to any industry. In both the cases of secondary and tertiary suppliers, the specification for purchase for military application has often been different from and more complicated than that for civilian use. This is often unnecessary but traditional in the purchasing system of the Defence Department of the Government. The practice is under constant review since it has led to unnecessarily expensive products for the military. It is said, perhaps anecdotally, that the printed specification for a new frigate when distributed to all concerned, weighed more than the ship itself and that the specification for fruit cake for supply to the US Armed Forces runs to over 200 pages. As a result of over-specification with its resulting procedures, a wooden seat for a lavatory cost the US Dept of Defense over $200. Such revelations may amuse the outsider but they pervade the culture of suppliers.

The Problems Caused by Long Term Reduction in Military Procurement

These are most acute for the primary contractors who supply the main battle equipment and defence systems. They face competition within their own nation as well as from the leading foreign firms. Modern weaponry is now so complex, expensive and takes so long to develop that the leading firms are increasingly seeking to rationalise their affairs. Their governments state that they will no longer give their national firms preference but will buy in the best market, provided that

their national security is not threatened in times of crisis. This may be the stated view but when it comes to practice, Governments still favour their own national suppliers. They have, after all, to consider the effect on employment and the political repercussions of the alternative policy. Cold financial logic in the short term does not always lead to the choice of the cheapest and the product most desired by the armed forces.

The defence industries in these countries have already contracted significantly since the end of the Cold War without causing problems on a national scale. Defence procurement has occupied a relatively modest role; the British figure for the past decade is about 40% of the total defence budget and equals about 2% of GDP; the defence industry directly employs less than 250,000 people. If this figure is again reduced, say halved, in the next few years it must be compared with a total of about 2,250,000 unemployed people. Many of these result from the closure of firms in unprofitable industries, including the "sunset" sectors such as coal mining, steel making, ship building. Western countries have a highly developed system of social support for unemployed people including financial support, counselling and retraining for new careers. As we shall suggest later, the problems of the primary defence contractors can be and are being dealt with in ways similar to those which face others which can no longer earn enough to sustain themselves. Contraction leads to local or regional problems, especially where the firms are the major employers in an area of otherwise low employment. It does not present a national problem.

Analysis of western experience is based upon the three categories of contractor mentioned above.

The Prime Contractors

These bear the main brunt of the problem. This is because:

1. They have little or no experience of successfully supplying civilian markets or indeed of the marketing process itself in any meaningful manner. This is because the market is fully defined by the procurement branches of the armed forces and because the specification of the product is often also fully defined by them. Overseas marketing is, of course, a matter of understanding the needs of customers but largely the weapons offered are those which have been supplied to and proved by the national forces at home. Indeed that approval is an important part of the sales appeal to countries abroad, within NATO forces and to third world buyers.

2. Defence contractors are, by the nature of their relationship with the military, high cost producers. This is partly forced upon them by the military procedures and requirements. In the end result, the culture of primary defence contractors is inimical to provision of value for money and therefore to their ability to compete with firms already supplying civilian markets. The firm and its staff have become accustomed to a minor role for cost and money; if the firm presents its costs skilfully, the military will provide the money. Furthermore, the established firm has a long lead in understanding and satisfying the needs of its niche markets; experience shows how hard it is for a newcomer to catch up with him.

3. Defence production systems are dedicated to the needs of the military products. They are usually of the most advanced type, sophisticated and designed to produce the highest qualities and finest tolerances to give the long term reliability required by western procurement doctrine. Western countries have not chosen to afford to

order masses of main battle hardware, designed for a short active service life and to be expendable in times of war. Neither have they planned to keep the majority in reserve for use in times of war. Reserves are modest and front line equipment in peace time is used for training and subject to maintenance engineering at appropriate intervals. Western equipment tends to be complex and therefore takes a long time to emerge from the design to the delivery to the active service units. This is aggravated by changes in specification during the contract by the military. Such changes, however, provide additional income and profit to the contractor.

The consequence is that military technology through the design and production process is apt to be somewhat behind the latest that is available in civilian products. This is especially true for electronics which are subject to rapid development of innovation and since they are applied on a very big scale can be put into production, application, test in the field and improvement quickly and cheaply due to the 'economies of scale' which are not available in military uses.

4. The largest and most powerful defence contractors, with their long experience and important research departments sometimes consider that they know better than the armed forces what they need and should have. On occasions in the 20th century in Britain, they have been proved right. Some of these firms sell equipment such as radar for civilian as well as for military use. They have been tempted on occasions to consider that their civilian customers should also buy what they, the contractors, have to offer. This is typical of the lack of modesty and understanding of the attitude of firms, which is characterised by the term "war socialism" but also much of western industry, notably in Britain between the world wars and immediately following the second one. This attitude is, of course, in violation of the fundamental principle of a market economy as defined by Theodore Levitt.

Thus primary defence contractors are at a disadvantage when contemplating a switch to designing and making civilian products competitive in the market. They lack the essential commercial skills, experience of evolution of civilian goods and services and the essential discipline of competition in price that forces designers and manufacturing engineers to produce value for money. They are high cost producers. It used to be said in Britain that *"an engineer can make for a penny that which any fool can make for a pound"*. Engineers in defence industries almost reverse that aphorism. For all these reasons western experience rarely provides examples of even attempting to "convert" products and services to civilian uses.

How have the primary contractors tried to solve their problems?

Their methods are the same as those used by other firms in a market economy. Most of them, looked at historically, are in a continuous state of change. The ownership of firms changes, individual firms seek association with others that will provide better business, marketing, financial sense. Others seek to expand their services to a particular market, look for firms where their abilities complement and where management skills lie. Others look to acquire firms with a good future in a niche that the buyer understands and where he can improve the performance of the latter with his superior management abilities and techniques. At the same time, successful firms regenerate their factories, rebuilding old ones, providing better layout for improved efficiency, better safety, environmental and ecological protection or closing those where such investment is unprofitable.

The primary contractors have learned to know their own limitations very well, and to come to terms with them. They also are aware that their Governments are not going to favour them for long, nor provide them with defence contracts that can be placed elsewhere more favourably to the public purse. No one expects to be subsidised for long to remain unprofitable and therefore to remain a burden on the national economy.

- They have decided to stay within the area of their core skills both commercial and technical, namely in defence and closely related fields such as civil aviation.

- They are placing more outside contracts for many secondary activities, such as design and manufacture of components and assemblies, procedures for testing materials, semi-finished and complete products, maintenance contracts, computing services and so on.

This **sub-contracting of secondary activities** has long been practised by advanced industries such as chemical firms as well as defence companies. Such activities as cleaning, canteens, medical staff, security, transport, travel bureaux which once were carried out and supervised by company's employees have been given to outside firms specialising in those jobs. The firm does not begrudge the profit on the work being taken by the contractor, who normally can demonstrate his ability to provide the service better and cheaper than the firm could for itself. This is because he specialises on that service and is not diverted from it. Similarly the firm can concentrate its efforts and skills on its real business.

The contraction in employment is handled differently according to the national culture. In France, defence workers are state employees and it is hard, if not impossible, to release them against their will. Consequently the firm relies on natural wastage through age, voluntary retirement and support through training and financial compensation for those who leave of their own accord. In America and in Britain defence employees work in the private sector but the State also provides valuable counselling, re-training and support for those who are forced to leave.

- They seek new alliances in the defence fields, both within their own country and internationally. Thus British, French, German, Italian and Spanish firms combine to offer rival tenders to NATO countries and of course for ultimate sale to third world countries, for battle tanks, helicopters, warships, surveillance and very long range transport aircraft. Others, including American and British firms, now collaborate with advanced firms in aerospace and avionics in the fSU. In the latter case, the West seeks to benefit from complementary ideas such as well proven engines for space rocketry, novel means of variable direction thrust for jet engines, a combination of GPS and Glonass, giving all partners additional benefits that were not available to either.

Finally, in the last resort, when no profitable, viable alternative is open, firms close their operations, especially the design and manufacturing facilities. In America, the Federal and State authorities are obliged by Law to offer assistance in such cases. They study the possible alternative uses for the site and buildings. These have been turned into such varied uses as sports complexes, health centres and prisons. Sometimes the buildings cannot find alternative profitable uses and are torn down, leaving the land for redevelopment. Retraining, counselling, help with relocation, schooling and financial support are all provided to those people who become unemployed. In Britain there are similar provisions, but local redevelopment is left

more to private enterprise and to regional rather than to national Governmental authority.

Land, buildings and equipment that has no potential to generate an income - a profit in English usage - in the short to medium term, has no value. Value can be generated only by finding alternative uses for them which will have a good chance of generating profit, which can be properly regarded as a return on the investment. This is noticeably hard for people brought up in the Command Economies to grasp; many, even in 1996, still believe that they have an asset value even when no profit is in sight for their redevelopment.

A market economy is efficient at redistribution of resources. A redundant factory can be turned over to a developer, split into small units suitable for use by very small businesses, some of whom can be manned by trainees formerly employed in the old factory. Unused equipment can be sold at auction or to specialist dealers and used in other businesses. There are many companies who buy and sell used equipment; much of that which is sold by modern industry, especially the defence firms, is up to date, even the latest in technology and in good condition. In this way industry regenerates.

Privatisation of loss making or contracting state-owned industries, whether in defence or civilian sectors, has not of itself been a positive factor for regeneration. In Britain where there has been much experience of privatisation, the step has usually been preceded by years of preparation to turn a loss making firm into profit. Otherwise it would not attract investors. The key to successful regeneration lies in finding people who are competent to run the firm in a market economy to take charge. Changing the structure of the ownership, providing large loans or state subsidies is simply a waste of resources without that competence. Good people may be able to make a success of a poor structure, but indifferent managers will ruin a well financed and well structured firm. Sometimes the existing managers buy the firm from the state or from a holding company which has, in the opinion of the managers and of their financial backers, handicapped its development. Such cases are not frequent. The road to success lies firstly in getting good top managers; once they have begun to demonstrate that they can run the business at a profit then investors may be attracted.

The secondary and tertiary producers do not experience to the same degree the same problems as do the primary defence contractors. They are already serving civilian markets. Good firms have always balanced their defence and civilian sales to provide an adequate hedge against a downturn in any sector. They know that defence cuts can be made arbitrarily by Government to which civilian markets are, on the whole, less subject. They keep a careful eye on all the factors that may affect their business, plan and act accordingly.

To the extent that their contribution to total sales of the primary defence contractors is a high one, it is correct to say that the operations of the secondary and tertiary firms in the defence industries are, and always have been, dual purpose. There may be small but significant variations in design for the military but that is also true between civilian customers. The firms choose their production equipment to cater rapidly and economically for such changes and to be able to supply small quantities. Of course, basic components, like the nuts and bolts, are made to standards. Most designers, whether for military or civilian purposes, will use standard components from the catalogues of suppliers rather than to demand "specials". Standard elements are readily available, cheaper and have a history

against which their quality and performance can be easily judged. As products evolve, the designers will try to maintain the use of standard components for the above reasons and also to allow cheaper, uninterrupted production as well as interchangeability in spare parts for customers. The discipline of value engineering will provide a motivation for this. New products coming on the market may therefore contain a large proportion of old components but still provide new features and a new look. This is done by restyling the case or housing, changing shape or colour, adding new features and their controls and so on. A good designer provides in advance for such changes by allowing them to be easily, quickly and cheaply incorporated in the moulds, tools and jigs. Computer aided design and manufacture provides this facility with some ease.

Modern production equipment is also designed to be flexible allowing families of products to be made within a machining centre. Such equipment is usually equipped with self measuring and correcting systems to take account of wear of tools, changes in temperature and so on. Some flexibility of course is also available from the familiar, general-purpose machine tools with which older factories may still be equipped. The disadvantage of the latter is the need for a lot more mechanical handling between operations, increased likelihood of stoppages with consequences for work in progress, pressure on workshop space, layout of the factory and accounting for inventory. Really old factories located on more than one floor also have many significant disadvantages. Very few of these are to be found in the West.

The message from western experience is that it is flexibility of mind, a broad experience based on understanding and successfully serving the market that determines the ability of people and firms to cope successfully with changed circumstances. Neither investment in new equipment nor subsidy is an adequate substitute. Change of ownership and structure of shares of itself does nothing useful. Leadership, with imagination, ability to choose, train and motivate a team to seek excellence and to perform in the required culture of excellence in every aspect of the business is indispensable.

Regeneration Of Ailing Manufacturing Firms In The West

Regeneration of a defence firm in trouble is no different in principle from that of other firms. It has to restructure itself to earn enough income through sales of its goods and services to survive. In Britain we have had a lot of painful experience since 1945, especially in the manufacturing sector. To put it briefly, the prevailing culture from then, certainly till the early 1970s, in many sectors:

- Continued that of War Socialism, where production was directed to military ends, and where sales, marketing, control of costs were unimportant to the degree that the skills in these areas almost vanished. Nationalisation of the "commanding heights of industry" by the incoming Labour Government reinforced the bureacratisation of industry and of business in general and its control by people even further removed from an understanding of market needs.

- Was rather self-satisfied. Having 'won the war', many people concluded that British engineering was excellent and made that victory possible and would therefore automatically be competitive in the commercial world to come. However they overlooked many facts, including the massive contribution of

American equipment, materials and manufacturing skills imported to Britain. Objective assessments, such as those found in Corelli Barnett's books, are less complimentary. As has been observed in the case of the powerful defence contractors, many firms selling to civilian markets were able to operate a "sellers" market by one means or another. These included Imperial Protection, which reserved certain markets for an oligarchy, the growth of powerful manufacturers and their trade organisations and the relative weakness of the average consumer. The ability of the seller to control the market after 1939-45 was reinforced by several factors. These included shortages of everything, continuation of exchange and import controls, a population with severely restricted purchasing power, a weak retail system which could not exercise any influence over its suppliers who could and did dictate what they should sell and at what price. These factors act in favour of the producer rather than the consumer regardless of the nature of the political-economic system; they are true for a socialist command economy, a capitalist system whether loosely or closely regulated by government. The culture has a stultifying influence on innovation in commercial as in technical aspects and is resistant to change over long periods.

- Tempted people to think that they could regain their world markets simply by following the traditional, pre-war methods of doing business. I well remember, having been appointed to an Admiralty engineering research station on my return from the Pacific Fleet in September 1945, being told by the Chairman of a world famous Clydeside shipyard - "British is best and Clydeside is the best of the British shipbuilding". One of the "Monsters", a liner which was the pride of the British Merchant Marine, was built in his yard; its boilers required frequent replacement of the water tubes which burned out due to a design fault. He was horrified when the team, of which I was a member, recommended to the Admiralty that a new class of Fleet destroyer should be fitted with boilers made by an American company which had done its hydrodynamic and heat transfer calculations properly.

Furthermore, when Marshall Aid was offered by the USA to rebuild Europe, the British used the money for the wrong purposes. Aid was squandered on

- Supporting the Pound Sterling as a matter of national prestige.

- Maintaining imperial links and the military forces to defend them, at a time of retreat from Empire and a realisation by New Zealand and Australia that their destiny lay in the Pacific and with America.

- A massive house building programme "fit for heroes to live in".

- A massive programme of social welfare.

In those days, British engineering firms emphasised in their advertisements their size, showed photographs of the huge sprawl, of the batteries of machine tools standing in neat rows and of rows of draughtsmen in white coats standing in front of "Double Elephant" sized drawing boards.

The directors pressed continuously for more productivity from the work force, using the methods of Frederick Taylor. This caused constant strife between the workforce and management. The directors overlooked the fact that in efficient factories the cost of raw materials and bought in components was far greater than their direct

labour costs. I remember that in one factory for which I was responsible, the works director complained that he did not understand why his factory was uncompetitive when he paid the lowest wages in the industry and in the district. It did not occur to him that the layout of the factory was chaotic, the use of resources was wasteful and that the processes all required much manual labour, especially in moving things around the factory. Such work is costly and adds nothing to the value of the product.

The supply of water in Britain was cheap, due to decades of under-investment by the municipal authorities who owned the water supply companies and who ignored cost reduction and efficiency because they were publicly owned enterprises not subject to the discipline either of competition or of proper audit. The Treasury had other priorities. Fuel was cheap immediately after the war; not until the shortages as a result of the hard winter of 1947 did the Government embark on a sensible policy of fuel efficiency measures which it suggested to industry and gave them financial incentives for saving energy. Land on which the factories were located was usually owned by the firms and there was no pressure on it for re-development in those days. Land values and rent were therefore low enough to be ignored by those who were disposed to do so. The buildings were often very old and their value had been written off the assets in the books long before. Many engineering firms were given by the Government practically for nothing the machine tools, some of which was the latest from USA, that they had acquired during the war. As we have noted above, there was little major modernisation in those industries post war. Some of the equipment dated from the first world war if not earlier. This was certainly true in the shipyards, even in the tool room, in which I was involved as a Naval Engineer Officer.

So many engineering firms, unlike the chemical industry, ignored for the crucial post-war years most costs except that of direct labour.

It was not easy to find engineering firms which could supply technical products to fine enough tolerances and of high quality of surface finish or a wide variety of products. Standardisation and "take it or leave it" were comfortable legacies from the war years. For example, when I was a project engineer in Imperial Chemical Industries (ICI) in the middle 1950s responsible for new chemical plant, it proved impossible to obtain in Britain the required specialised steels or glass lined pressure vessels to specific design. The items on offer simply did not suit and the suppliers were indifferent to the needs of its potential customers. As a result the goods were bought abroad.

The unjustified self-satisfaction, not to say "smugness", of British engineering led to loss of overseas orders as well. For example when ICI licensed its high pressure process for making polyethylene in the USA, its suppliers of special products working at 2000-3000 bar assumed that the American licensees would have no choice except to get those products from Britain. So they made no specific sales effort in USA. Their prices were high; consequently some American firms worked out how to supply the same products and did so more cheaply.

In many firms the Works Manager decided and announced the costs of making the product, it was someone else's job to add a profit and to sell in competition.

The Germans and the French used Marshall Aid to invest in modernising their industry and infrastructure, thus creating the foundations for a strong economy. One this was gained, social benefits could be afforded and began to flow. Their

income per capita has been for some years significantly higher than that of the British.

Partly as a result of these factors, Britain never regained its pre-war share of world trade in engineering; this share has steadily declined since then. More advanced as well as quite simple products are imported than previously. Many firms have disappeared, gone into liquidation whilst others have been revitalised by radical changes in the top management, both foreign and indigenous. As a result Britain in the 1980s and 90s has seen some highly profitable manufacturing firms capable of surviving, competing and growing in the world economy. But the process from poor performance to success has been a long one; in some cases the changes have taken 10-20 years. These have only been possible when the firm demonstrated objectively that it had a future in the market and that the efforts necessary for it to perform well would be justified and that the investment would be repaid fully.

Taken all in all, these attitudes were the symptoms of what one might call the British Disease. This illness continued well into the early 1970s when a new realism and a new culture of business began to take over. The example of this history is important to the fSU; what was evident in the Soviet Union, and in the current continuation of the culture of the Command Economy in Russia today has many close parallels with the post war British disease, as Russian readers of the above will recognise.

What have been the steps along the road to the regeneration of British engineering industry?

From the preceding discussion it is obvious that the first issue is to analyse very carefully the actual and potential position of the firm to perform satisfactorily in the marketplace. Has it got a niche that is worth defending and investing in for the future? Has it got the capability to do so with its present basic range of assets? Let us emphasise Theodore Levitt's points:

> *"The view that an industry is customer satisfying, not a goods-producing process is vital for all businessmen to understand. An industry begins with the customers and his need, not with a patent, a raw material or a selling skill".* He might have added *"or with a factory and its equipment".*

Changing attitudes from those of a goods-producing culture in times that allowed a sellers' market to one of satisfying customers was the key and the first aim of every management that set out to succeed in a world that had largely absorbed those lessons and changed the circumstances of trade within which companies had to live if they were to survive. Since the ability to serve a market has many facets, clearly the contribution of each to success or failure has to be examined. This is not the place to do so except very briefly. Books on marketing will repay study; so will my own publication published in Russian by the Kyiv International Civil Aviation University.[1]

One has to look at the requirements of the market as it develops, study the reasons for relative performance of others serving the same needs, not only with similar products but with different technologies and solutions. One has to work out what has to be done to become competitive in every field: share of the market, design,

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[1] Inzhener Rynochnoy Ekonomike, pub Kmuga, Prospekt Kosmonavta Komarova, Kiev.

quality and reliability, costs and other aspects of manufacturing processes, efficiency of distribution systems, after sales service, competitive pricing, adequacy of profit to sustain the direct and indirect costs as well as to reserve sums for re-investment for development as well as to pay rent on the financial assets employed, including of course dividends to shareholders. It may be that the market no longer requires its products, a whole product range may become obsolete, succeeded by better products or a totally different means of satisfying the market. Examples, of course, come easily to mind.

When motor cars superseded carriages the need for horse whips declined. No amount of work to reduce their costs of production and therefore lead to price reduction would stimulate sales to the old levels. Large heavy motor-bicycles, which were the main ones in their field up to the end of the second world war, were superseded by the small, light Italian motorscooters which were not only cheaper to make and run but became a cult article amongst the young. They still are. The Italian scooter was based partly on the Piaggio aircraft firm which made small auxiliary engines for aircraft. They adapted them to power the Vespa scooter which they made jointly with Fiat. This trend was followed by the Japanese who developed the idea into the more conventional image of the motorbicycle. The old European versions had to redevelop their range, styles, designs and appeal to gain a share of the total market. The heavier, more powerful and very expensive motor-bicycle has a niche in the market but not a mass market as formerly.

Most new products come about from identifying a need rather than being driven by new scientific or technical advances. It follows that the closer it is to the users the more accurately will a firm identify new opportunities. Many new ideas originate in the users' organisation which may be a hospital, laboratory or user industry. It is in their interests to work with firms who can develop the innovation and market it successfully. Hence the value and mutual advantage of close vertical relationships between user and supplier. These sometimes result in joint ventures or in the user becoming a shareholder of the supplier. This has been common in the German chemical industry and its engineering suppliers, which indeed may have begun life as a small part of the former and "spun off" to become wholly or partly independent, serving not only their former firm but also its competitors and perhaps even more widely.

But suppose that the analysis of competitive position shows a continuing need for one's products which are not doing too well? What then? Each company that requires regeneration has its own culture and negative features which militate against survival and success. These have to be analysed in detail, without vanity or illusion.

The British Tyre & Rubber Company

The example of the turn around of this company from loss to significant profit is very instructive.

During the war the British Tyre and Rubber Company made a range of tyres for automobiles, belting for coal mining, hoses for a wide range of purposes and faced, like other firms, the need to convert its outlook and commerce to an increasingly competitive, civilian economy. It was a licensee of the large American company B F Goodrich and was gradually losing its market share to the major British tyre manufacturers. Being a licensee, it was dependent on BFG for its technology, but

as is so often the case it did not receive the latest and was thus always behind its competitors which had their own R&D laboratories. In the late 1950s the British Tyre and Rubber Company was a small, struggling firm gradually losing its market share to the major tyre manufacturers. It was not generating enough money to bring its tyre factories, then considered to be the main core of its business, up to a competitive standard. BFG furthermore declined to increase their investment. Its directors took a decision which was psychologically bold and radical as well as being unique in that business, to close the tyre business and to concentrate on regenerating the industrial products based on rubber. Had this decision not been taken the firm would have gone into liquidation in very few years instead of becoming one of the most successful industrial groups in the world. But that by itself did not address the issues of the culture of BTR, as it was then known; it provided the firm with a breathing space for the radical changes required to survive in this field. The mistakes as well as the wise business decisions of its subsequent history are instructive.

- The firm invited several senior people to join the Board who had come from Imperial Chemical Industries, a company that faced the full competition of dynamic foreign firms. The most senior replaced the old chairman whose experience, although also in the chemical industry, had been in a company that in those days had a near monopoly in Great Britain of its products. The next senior was the brilliant, retired research director and later chairman, of the plastics division of ICI, who had masterminded the development of its petro-chemical products into entirely new lines as well as being one of the discoverers of polyethylene. He invited me to join as technical director with the aim of evolving its products and processes.

- Another key appointment was someone with important commercial experience in one of the leading British firms. He was instructed to go to North America to assess the state of the industry there. The managing director told him: "If we do not look abroad we will not know how bad our own products really are." As a result BTR Canada began by buying competitive products locally and trading them. This had two effects. Firstly one learned what customers wanted and secondly the outside purchases were used to stimulate the old fashioned British technologists to produce competitive products of their own.

- One of the less successful appointments became, but only for a couple of years, a senior director. He, unfortunately, was not a deep thinker, but accepted the fashionable pronouncements of leading management schools, of which he was a product, and management consultants. It is noticeable that these firms tend to deal in recommendations that run in cycles.

First, perhaps, the firms are recommended to diversify away from their traditional lines, by buying into firms serving other industries. This might be supported by arguments that the fortunes of each sector run in cycles so that a business serving one will do well whilst the other is in downturn. The consultants having taken vast fees to advise a firm on purchases and diversification, this recommendation as a rule was followed, allowing for a suitable time for implementation, by its opposite, namely to concentrate on its core skills. This would be supported by arguments such as those set out above.

The director mentioned above followed the first advice, pronouncing a dogma that rubber products were old fashioned. Plastics were the modern polymeric materials with technologies similar to those for processing rubbers and which, therefore, BTR

could process and sell without problems. He acquired some plastics companies at a very high price from an entrepreneur with a flair for publicity. Some of these had the added attraction to him of serving the defence industries which were doing well in those days as well as being "high tech", with its appeal to a particular kind of vanity. Two of those firms were indeed doing an excellent job in niche markets but were too small to stand competition from firms that were no less competent technically and who could offer better service worldwide and better prices to the customers who were mostly large firms. *Suppliers must have sufficient importance to customers to be able to avoid having the terms of trade dictated to them by the customers*. These are usually manufacturers of primary products and have tended in recent decades to become powerful commercial entities. This kind of commerce tends to follow Pareto's Rule which states that 80% of the profits come from 20% of the customers. It was not long therefore before this group was sold to a competitor. Those firms serving the defence field had to be closed because of accountancy practices inconsistent with those of the MoD.

A second, fashionable recommendation from management consultants was to "divisionalise". This practice in essence allowed the management to operate a tree structure. The Main Board was supposed to make and oversee general policy, whilst the operating firms were grouped into clusters. These could be grouped by various criteria, the best of which is undoubtedly that of market sector served. For example one might have an Automotive Products Division, a Health Services Division and so on. Each would have a Divisional Board with a small secretariat with responsibility for business policy and performance of the firms in its Division. Finally each subsidiary had its own management structure, was responsible for its own affairs, was responsible first to the Division and then to the Main Board for performance and profitability. It submitted its business plans yearly as well as when necessary for special investment decisions upward.

This system was also put into effect; there is in principle not much wrong with it. But BTR was then far too small for the system to be effective and cost efficient. It was inappropriate at the time. Divisionalisation was incorrectly applied. The errors were threefold. First it was based not on markets served but on products, locations of factories and processes. Secondly the business plans were allowed to be too general rather than focussed on profit planning. Thirdly the monitoring system denied the local management the opportunity to be fully responsible for their actions and financial results. They were always supervised in too much detail and were led to believe that the holding company would cover their financial shortfall. Many of their managers never grew up to be mature businessmen, so they were not able to address the problems of performance at the time as well as the all important one of their ability to take further responsibility if and when the company grew.

The company was typical of many rubber producers of the time. The factories revolved around the carbon black kitchen, its drug room, mixers with an introspective language surrounding the compounding and processing. This made up the sum total of rubber technology; it was a black art - literally - kitchen chemistry like that of the alchemists, the medieval "priests of science" involved in the search for transmutation of base to noble metals. The application of physics, good chemistry, the science of the flow of non-Newtonian liquids, heat transfer and good engineering seemed to be absent when I joined the company in 1960. Even the design of the products themselves was based more on trial and error than on good engineering science. The factories were primitive and poorly laid out. This resulted in heavy manual labour to shift, for example, conveyor belting between operations and to the delivery stores. The equipment in the mixing rooms,

moulding, extrusion and calendering rooms was very old, based on half understood practice with no understanding of the principles of polymer engineering. Most of the personnel, who were rubber technologists, had no training or interest in the subject.

Consequently there was no understanding of the technical and operational culture required to improve quality, efficiency of use of all resources and to work for steady evolution of product and processes. This was my prime task. This was accomplished by motivating the small team of educated, enthusiastic people who had a wider education and by importing a few key people from outside. By applying the principles of polymer processing that I had helped to develop in ICI, the rubber processes were transformed. The products were far better, their dimensions became more accurate, the properties of the rubbers became more consistent and the productivity from the equipment and personnel dramatically improved; costs of course were reduced. Some modest investment in new equipment was involved and was afforded from savings.

The next task was to examine the utility and effectiveness of the 17 factories which turned out a mere œ15 million worth of sales every year. As a result some were closed, their production moved to other sites which were drastically improved. Practically the last available funds of the firm went into creating a modern mixing and calendering shop in the main factory in the north of England. This allowed the efficient production of rubber for a wide range of goods and processing of a wider range of materials which provided the basis for a competitive range of conveyor belting for use in coal mines, iron ore extraction and steel works.

This work was accompanied by a programme of internal training for factory personnel to enable them to understand the culture needed to be successful and to be able to contribute to a continuous process of improvement of profit through better products, more efficient and cheaper processing. The factory managers and workforce were given full responsibility for this work and could call on the central technical department for assistance. The factory management and technical centre of the company collaborated intimately in product and process development. This replaced the old system whereby only the technical centre was interested and responsible for innovation. That created a psychological barrier, the factory treating the centre and its ideas as unwanted outsiders which merely interfered with the established, familiar routines which required little thought and presented no apparent stimulus and challenge to the works' people.

At the same time the old Divisions of the company were simplified and reorganised into market orientated business cells with their own fully responsible business managers. These business management groups were thoroughly indoctrinated to perform through a simple but effective profit planning system and a method of accountability for promised performance in every sense, beginning with profit. Money is the most convenient way of measuring and comparing inputs of all resources and outputs. But this of course required that all resources were measured accurately enough to enable comparisons to be made of doing things one way or another.

The company's real improvement began once a new chief executive was appointed; he came from the management of one of the subsidiary divisions. He demonstrated to everyone that the methods that had been discussed in training sessions and had received only surface acceptance from the staff were now to be pursued and developed in hard practical ways. One cannot hide the fact that many old fashioned

managers resented the new methods; they lost their independence since they could no longer hide anything. However, they soon realised the benefits of achieving genuine profitability since the holding company supported their justifiable ideas for developing their business by investment and professional assistance where that proved to be useful.

The perception of the Company in the City as well as in the commercial scene rapidly improved through their appreciation of the dynamism and vision of this outstanding businessman. As a result the Government-inspired Industrial Reconstruction Corporation invited him to open discussions to absorb a much bigger company in the same field, the Leyland and Birmingham Rubber and Engineering Company. This company was not doing too well and its chairman, an honest, capable man steeped in the industry, was of retirement age. His first discussion with the new head of BTR ended with him expressing his complete satisfaction in the suggested take-over; he saw that the company he had built up would be in good hands.

This merger provided the opportunity to create a strong sub-contracting business offering a wide range of industrial products. It also gave BTR a strong presence in Southern Africa. Given the necessary energy to create change within the firm it would be strong enough commercially to deal on good terms with the big firms that formed its market. The kind of work needed to attain the continuous improvement of profit through excellence is described, for example, in my book already referred to.

The next year saw the new company returning a loss for the first and only time in its history both previously and since. From then on the disciplines of its management produced the gains.

The key to success is of course external in its relations to markets which internal disciplines can only support rather than create. It retained its simple tree-like management structure which became more appropriate as the company grew. It has always retained a simplicity of style, a very small headquarters staff, a minimum of paper systems, reporting in person, consultation at every level of management and an involvement of every employee in results. Its directors have never figured amongst the flamboyant, obviously rich businessmen; there is a minimum of privileges and a becoming modesty.

The Company extended its commerce through identifying its opportunities. These can be expressed very simply.

- BTR searches for firms operating in market areas that it understands well and which BTR considers after analysis could return better results by better management of BTR's type.

- BTR examines markets in territories that seem to it to be under-developed and where its presence could provide services that will profit the region and provide adequate profits to a BTR presence there.

Good business analysis and planning follows the initial imaginative step to search for opportunities in new territories. This enabled BTR to establish itself in Australia, North and South America, Western Europe and in some Pacific Rim countries.

- Needless to say, it promotes its management style and culture in these territories adapting to circumstances and employing and promoting local people. Each of its operating firms remains small, employing a few hundred people, rarely exceeding a thousand. There are no dinosaurs in operating companies, only a very small staff in divisional, regional centres and headquarters. BTR has only 14 directors who come from various operating companies across the world and whose education ranges from chemistry to accountancy.

- It has concentrated so far on incremental product and process development and modest innovations. Its internal technical centre supports these but BTR has no long range research and development centres. It does not sponsor science in universities but relies on its staff to apply available science and technology, regardless of origin, to the benefit of the company. It will acquire new technology through licences and other normal methods. As it develops into systems engineering this policy may well be modified.

In twenty years its growth was been phenomenal. In 1966 its turnover from its subsidiary companies was £15 million. £4 million of that was represented by sales of conveyor belting to a single customer, the National Coal Board. The Export Executive had in a few years generated a turnover of £4 million a year, having started from a mere half million pounds a year. So one can see that the rest of the sales from those factories were less than half the total turnover. By 1996 it grew to earning a profit of $1500 million from about £10,000 million turnover in 1500 subsidiaries worldwide. 90% of these are in OECD countries. It employs 125,000 people in total. From 1986-96 its average return on capital employed has been 30%. This is exceptionally high in engineering and especially in its sector of supplying mainly to the powerful prime contractors. On average every employee contributed per annum £78,000 of sales, nearly four times the total cost of employment, and a profit of £12,700.

At the present time it is developing more into the design and provision of systems to prime manufacturers and users to add to its old traditional fields of supplying only components. This is because it seems that the cycle of adequate profits and growth in components is beginning to turn down; the future does lie in more complex systems.

The BTR example is presented here because it is well known to me as a former main board director. There are other companies in Britain and elsewhere which are successful and use similar management methods and strategies. These methods of course have been applied in countries with stable social relationships which operate within reasonably stable and predictable systems of law, financial, taxation and other aspects which are essential to business planning and success.

Summary Of Actions For Successful Development Of A Company Threatened By Change

- Shed all illusions, make realistic assessment of its actual and potential position in the market place.

- Close activities that have no future, redeploy, if necessary by sale to others, assets that cannot yield a profit to the firm by methods that are cost effective and over a sensible timescale.

- Identify profitable opportunities to serve niche markets, learn what governs those markets.

- Determine whether the firm has or can develop the necessary commercial understanding to exploit the market opportunities identified. If not, either abandon the project or seek to attract or acquire partners who have that skill and understanding.

- Create a simple management structure which will inculcate a proper culture within the retained activities. Organise them into small enough operating units to enable people of just above average ability to direct them successfully with advice, assistance and guidance from a supervisory board.

- Identify and develop a professional operating culture appropriate to each business, both internal to the plant and outside it. Part of that culture requires friendly assistance to suppliers in order that they can satisfy your requirements. Your firm depends on them and upon the surrounding businesses and organisations. Be a good neighbour.

- Install a financial strategy, culture and operating plan for continuous profit planning and improvement. At the same time create within the total management structure a means of monitoring and aiding the fulfilment of the profit plan.

- This requires attention to every detail which will contribute to continuous reduction of costs, improvement of quality, reliability of product that contributes to the customers' perception of "value for money".

- By such means create a profitable company with prospects which are visible and demonstrable to potential partners and investors.

- Retain strategic flexibility at every level of management to enable people to seek, analyse and propose new ventures that are appropriate to the firm.

- Be ready to invest in training the people and motivating them to perform well and to be fit for further responsibilities.

- Do not hesitate to sell activities that are no longer appropriate to the overall business strategy or which show inadequate improvements over a long enough period.

- Develop good relations with local educational and training establishments, develop collaboration of the firm's staff with academics and local experts. Exploit their abilities to improve your products, processes, services and business as well as to provide your staff with up to date training in subjects that are important to your firm. In return create an awareness of business practice amongst academics and thus improve their understanding of your realities and to provide you with graduates from their schools.

- Be sure to develop close relationships with local communities; be a good member of them, contribute to their environment.

Let us see how much of this experience in reconstructing a manufacturing firm can be applied within countries emerging from a Command Economy.

The MIC Of The FSU - Its Strengths, Weaknesses & Problems

The MIC occupied a very much larger share, perhaps ten times more, of the national economy in the fSU than it ever did in peacetime in western countries. Estimates vary, but the fact is that it absorbed a very significant part of the GDP, and of the industrial labour force and "qualified workers, engineers and scientists". About 80% of all R&D was directed to military purposes in special institutes separate from the producing factories. It formed the backbone of Soviet industry and the educational system whose main role was to supply it with everything required to sustain the military strength of the country.

The military procurement system answered very well the requirements of Soviet military doctrine. In outline it worked thus:

The General Staff produced the doctrine, according to which the Warsaw Pact countries faced a potential threat from NATO. It follows that the response to the perceived threat was a development of the massive war of manoeuvre that the Red Army conducted to victory over the Wehrmacht in 1945. This requires massive forces, equipped with very large numbers of heavy battle equipment. Most of these were kept in reserve, with regular checks and their engines run for short periods. The active service regiments were fully equipped, their equipment, after expiry of life between service periods, was returned to factories where it was completely stripped down and returned to store. Recent doctrine demands much more sophisticated equipment, especially to fight an electronic war of communication systems and in space. Putting these two requirements together plainly places a huge burden on the national economy which is much greater than is the case with NATO countries which follow a much smaller requirement of materiel. Furthermore the fSU has a far less developed national economy and therefore cannot sustain the consequences of its own military and security doctrine. This, together with the inefficiency of the Command Economy in its wasteful use of all resources, natural, human and technological, caused the collapse of the Soviet economy. The continuation of the outlook, methods and culture of that system which still pervades the thinking and gut reaction of many people who are in responsible positions in the fSU largely resists the essential changes needed to improve the economy and to reconstruct the MIC to play an efficient part in the civilian economy and to provide for the defence of the country.

The essence of the system can be stated briefly as follows:

- The Defence R&D Institutes respond to the analysis of the General Staff which sets out its views of the future battlefield. The response of the military scientists is twofold. Firstly they imagine freely what systems and weaponry might give the armed forces an advantage and conduct the first phase analyses of those ideas. Secondly they provide the first steps for replacement of equipment that is becoming obsolete. If their work is approved, it is passed to specialist design centres, which are usually separate from both R&D and from factories. This is not the case in some key areas which include military aircraft, aerospace rocketry and equipment and in weaponry such as the Kalashnikov automatic rifle and infantry mortars. These are produced in integrated R&D, design and manufacturing combines, rather like their western counterparts. As a result

these weapons are extremely good. But there are some limitations in some cases caused by industrial deficiencies which show themselves in a restricted range of engineering materials whose properties are often inconsistent and in the manufacturing phase, which is not attuned to consistent, high quality output. These facts contribute to the relative high cost of production of finished goods even in the military sphere, but grossly so in civilian products from the same factories. These tend to use components of lower quality than those in the military; as a result their life, reliability, safety and performance suffer. This is especially true for electronically based consumer goods.

- The drawings of the design bureaux are sent to a wide range of factories all over the fSU. These factories were instructed by their ministries to produce in the required numbers and to required schedules and to deliver them at a stated price to the military and civilian users. Their work was closely supervised by military personnel, both operational and engineers, who spent long periods in the procurement system, usually after experiencing active service with the appropriate arm of service.

- These factories would be supplied, at least on paper, with all that they needed for production from other organisations who worked to the instructions of their ministries. For these reasons no factory in the fSU has developed a professional cadre of purchasing engineers who would be capable of deciding the best sources, supervising and seeking to improve their performance as suppliers in quality, delivery and price.

Needless to say, practice did not go as smoothly as the bureaucrats planned on paper. Consequently user factories were constantly short of essential elements to the detriment of good production management and cost control. The practice grew up in the fSU of employing "facilitators", whose job it was to visit suppliers and to cajole by one means or another the diversion to themselves of materials that were due to them but had gone elsewhere or were otherwise "in deficit", ie in short supply.

- The failures of the command system provide an additional reason for the main factories to widen their scope beyond their core job and skills to include many jobs which in a well conducted economy would be supplied effectively by specialist sub-contractors. Thus the factories grew. They sprawled as new shops were opened on the site, they embarked on things well outside their field; they made crates, rudimentary pallets and storage boxes for carrying goods between operations, cutting tools and jigs for production. Metal working factories bought moulding machines, usually of poor design from Eastern Germany, to make the plastic parts that they needed. Fine mechanics shops added foundries and blacksmiths' shops. Most of this work is rough and ready, of poor quality which works to the detriment of the main production. It uses inefficiently the equipment to make components in small numbers and so it is underemployed. Labour productivity of the secondary operations is even lower than that on main line work. Observation by western engineers in many factories turning out products for both military and civilian purposes leads to their estimate that, on the main production lines, labour productivity is between 10 and 20% of western norms.

- The Ministries dictated the price at which goods were to be sold, as well as the prices the factory should pay for incoming goods and services such as electricity and transport. The transfer prices of goods to military factories were often lower

than to civilian ones. Therefore, the factory managers never needed to control or to reduce costs. Most factories lack the means of measuring the use of materials, energy and service. The appropriate meters are sometimes not even available and only recently are discussions opening with western firms to supply them. Measurement in the required detail is essential to allow managers to determine where savings could be made and to take proper business decisions. The so called *Khozrashchet* (self financing) that was discussed at various times from Khrushchev's to Gorbachev's era is no substitute. It simply put another responsibility on the hapless director without giving him the means of exercising authority properly.

- The standard system of management is to organise it by function. The main, indeed perhaps only, job of the management was to fulfil the numbers made to the Plan set by its Ministries. Provided that was met, nothing else mattered much. Workers made things and inspectors rejected or passed them. There was and is no other system of assuring quality. As a result reject rates are very high. For example the first pass reject rate of TV sets in a military factory was conceded by its General Director in the summer of 1996 to be near 30%. Toshiba's equivalent in its British factory is 2%. Toshiba state that every 1% requiring rework costs them 5% of nett profit.

- The factories are far too large to be well managed even if the managers had a proper system to enable them to take managerial decisions leading to improvement. This is partly due to them taking on secondary activities which include the social services which are provided by employers rather than by municipal authorities. These are estimated to absorb between 15-20% of total costs and of course a lot of managerial time. Western firms rarely employ more than 1,000 people on one site, 500 would be considered better.

- In the fSU, all commercial work was undertaken by specialist import-export organisations based in Moscow. They developed an expertise in the commercial aspects of international negotiations which was theirs alone and not disseminated to other organisations engaged in education, research, design or manufacturing. However their selling policies were often designed to gain foreign currency even if the price negotiated led to actual losses internally.

Since the collapse of the USSR these central organisations have largely lost their functions and some leading organisations such as those in oil and gas industries and aerospace have been given authority to deal internationally. They lack experience and have much to learn if they are to hold their own and achieve contracts that are fair to themselves. This is especially valid when assessing the true costs and value of that which they offer, what the market prices are and what potential purchasers would be prepared to pay. The firms are also inexperienced in writing proper conditions of sale, purchase and tender.

These deficiencies are of course only too true for the vast majority of factories, whether military or civilian. They have never had to do any selling or marketing, not even to negotiate on even terms with their own purchasing authorities. Consequently when, as is the case today, they negotiate deals with westerners, they do not get a fair deal. They blame the exploiters of western capitalism, but they have themselves to blame for naivete, rushing into what appears to be an attractive contract only to find that they could have charged much more and still obtained the sale.

- Many of the defence organisations produced goods for civilian uses. Most of these, however, are seen by the population, in many cases correctly, as being less desirable than the foreign imports that are now freely entering the country. As a result the MIC has lost much of its civilian market as well as suffering a drastic reduction in military orders in a sudden and unplanned fashion.

In summary therefore the firms of the MIC of the fSU share the same faults as do their western counterpart main contractors but to an even worse degree.

- They lack all marketing, sales and commercial expertise.

- They have no means of identifying their costs properly.

- They are wasteful, high cost producers. Their civilian goods are usually worth less than the elements that go into them. This is one reason why the MIC sometimes sells its incoming materials instead of processing them. Another, of course, is that there is no demand for them or for military hardware.

- They lack the data and the system which will provide them with the ability to be confident that they are covering their direct and indirect costs, let alone making enough profit to pay taxes, customs dues, to replace old equipment and to develop the business.

- They lack the normal culture of competitive business within the factory, in purchasing, supply and in integrating R&D, design, development with manufacture and commercial studies to enable them to satisfy markets.

- They cannot really make a long term business plan to reorganise themselves, to carry out the steps that are normal in a market economy modernisation of every aspect of their work, training their people, closing loss making businesses, investing in medium term support for profitable ones and demonstrating that they have turned the corner from loss and inefficiency to profit and improvement.

- Their best chance of survival so far is to exploit their strength. This of course lies in the military sphere but there is no demand for most of their products. A useful exception is to be found in the aerospace rocketry. They can sell their reliable equipment to launch foreign satellites in competition with the French and Americans. They have also begun collaboration with American firms such as Lockheed to install Russian engines on American rockets. These Russian factories are probably the best in the MIC and compare well in every way with foreign firms. In this way they are following the same path as that of the main American and European contractors. But this will not save the rest of the MIC or the Russian economy.

- They remain prisoners of communist ideology, from which grow damaging and erroneous, economic, managerial and social "theories" created by people working in abstract without practical experience of competitive industrial activity. This explains the reluctance of many of the top leaders of the country, who have known nothing else but the ideology and methods of the Command Economy, to abandon their attachment to size for its own sake, talk of output instead of sales, centralised control and instructions given even to those few directors who want to move toward a profitable operation in what has become and will remain a market economy of sorts. As was seen in the account of the early days of

BTR, detailed supervision and instruction from the top stifle the initiative and motivation of younger and more junior managers to improve their performance and to take responsibility for their sphere of operation. Gorbachev saw this for himself and writes about it in his memoirs.[2]

Things are no better today. Attempts by western advisers to persuade factories to organise themselves along the lines set out above are often treated as policies aimed at destroying the strength of the fSU and of Mother Russia as a Great Power. This is perhaps understandable given the background of the leadership. To them, small is not beautiful, specialised activity is not efficient, devolution of authority along with responsibility is not good management practice - such things are UnRussian!

They fear devolving responsibility to managers of small firms that might become specialist suppliers locally to other factories and users. Once some of these are established in competition with each other and become profitable then they will become objects that attract both Russian and foreign investors. The main factories will integrate themselves with the necessary financial, commercial, technical R&D, design elements to enable them to progress and to generate their own future income for growth without subsidy. On the contrary they will support both local and federal state budgets. But these steps toward wealth creation are essential elements to allow Russia to build its economy. This would provide the vital means of restoring the health of the people, providing them with work, adequate income and a surplus to pay for reinvestment, essential defence and rebuild up the infrastructure which is falling to pieces. Other remarks hostile to these steps assert that the West wishes to dismantle the MIC to prevent it becoming competitive with the West. In answer to these remarks one might state that sales of weapons by the fSU would be assisted if they were to become better at marketing and at the culture of competitive manufacture. As it is the leading western firms collectively outsell Russia by a factor, an order of magnitude. The market for arms is in any case decreasing and cannot provide any country with enough income to rescue it from poverty. "Sell arms, save Russia" is as false a slogan as was that of the Black Hundreds: "Kill the Jews, save Russia".

Judging by the lack of real progress over the past 7-10 years in "perestroyka" and in "conversion" of the MIC it will take the Russians many decades to become competitive with the advanced industrial countries in manufactured, civilian goods and services. Many of the steps taken along the way have been devoid of commonsense. During perestroyka factories were instructed by their Ministries to design and make things that were totally inappropriate. Since the collapse of the USSR, various international bodies have, at their own expense, sent consultants into the factories; many of their suggestions have also ignored realities. These experiences quite reasonably disenchanted and engendered cynicism and allowed some of the wiser suggestions to be ignored. There is a better way forward if everyone is willing to learn from their own mistakes.

It is to the advantage of the west if Russia does produce things that others want to buy. It must be noted that the highest volumes of trade lie between countries that are the most advanced industrially and which have the largest GDP. Only countries, such as those in the Arabian Peninsula, which. happen to have almost unlimited sources of natural mineral wealth and at the same time a small population can afford not to produce manufactures. The fSU is not in that happy

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[2] Zhizn I Reformy.

position any more than are the advanced industrial countries in North America, Europe or the Far East.

These countries depend on competition and interchange of goods and services. They do not fear Russian industrial improvement. On the contrary, if Russia develops along those lines its per capita income will rise and provide a huge market for western products whether imported or made locally. In return it will not be enough for Russia to pay for these goods by selling raw materials. It has to manufacture a wide range of technical goods if only to employ its people but also because there is no reason why Russia should not contribute its share of good quality technical products for its own use.

Conditions Affecting Business Development In FSU, Especially In Russia

It has to be remembered that the rescue of an ailing western firm is difficult enough even when it takes place under conditions that are favourable to business. These include legal, financial and taxation systems that are not punitive and which can be relied upon not to change drastically in the foreseeable future. Changes should be fair, seen to be fair and introduced incrementally. In Russia none of these circumstances pertain.

The old soviet laws were of themselves none too favourable to regulate state enterprises; they simply do not apply to private enterprise. The actions of the post-soviet government do not encourage private enterprise to behave honestly and legally; they give the impression of inconsistency, of in-fighting between various ministries - which are proliferating by the month - and all of which claim some influence and control over an unfortunate enterprise or institute or programme. There is a lack of understanding of what is required from a legal structure by business. Government by decree is traditional in Russia and so is the need to modify or cancel decrees which are found to have consequences contrary to their intent. Sometimes these corrections follow, sometimes the corrections are improvements, often the cure is worse than the fault it tried to overcome.

The old, practically cashless, means of trading between State enterprises no longer exists. In spite of every attempt and endless advice from competent Western bankers, the system of clearing accounts between the Government and its own enterprises, between enterprises themselves, still does not work. There is endless trouble in getting paid which goes right throughout the chain of commercial events. Consequently many firms resort to the old methods of direct barter; even their employees are paid in kind and then have to sell, for example, lighters and electric razors in order to pay their rent and food bills. There is a lack of will in some powerful quarters to put the matter right. It pays a debtor, whether government, firm or bank to withhold payment and to earn high interest by depositing the money and then repaying it much later in devalued currency since the inflation rate by western standards is high.

The taxation system is at one and the same time punitive and therefore ineffective. There are lots of taxes that bear on commerce. Even something as basically simple as VAT is calculated in such a complicated way as to suggest that the British system could be followed by a five year old child. Were firms to pay all taxes as demanded they would rapidly go broke.

There is no agreed sensible basis for calculating values of assets such as land, buildings and for amortising equipment.

There are endless quarrels between the Federal authorities, the regions and municipalities concerning the division of receipts from taxes. Consequently many regions do not have the money to take over the social services that are a burden on employers; nor is there enough to pay for unemployment, retraining those out of work and for the payment of pensions which are also overdue, just as are the wages of State employees and those of commercial enterprises. These are justifiable reasons for the strikes of workers in many enterprises ranging from coal mining through transport.

At the same time customs dues are levied and removed from time to time on both Russian exports and imports. It is reported by the Finnish Ministry of Foreign Affairs that 30% of the total Russian Federal budget in 1995 was due to customs payments across the Russian-Finnish border alone. There are many temptations brought about by poor laws, poorly paid officials and the consequent poor enforcement of tax and customs dues. There are other temptations to corruption which have enriched a significant minority of "New Russians".

What Can Be Done By The Enterprises Themselves?

Much can be done by responsible general directors given authority over their business. They could follow the precepts set out above.

The most important job for the general director is to determine his future markets. In current Russian circumstances this is not an easy task. Russian Government enterprises and large commercial ones, even those in private hands, have a struggle to pay for services and suppliers need to be very careful before they accept assurances that the potential purchaser can confidently enter into a commitment in the long term. Were this not to be the case and if this situation were to change then one could contemplate a forward analysis on the following lines.

Study the import schedules that the Customs authorities should prepare regularly. Each factory will rapidly be able to determine what kind of product it could make with its existing equipment; it could then select the most appropriate from the list of imports and then look for regular imports of the same kind of product and find out what kind of organisation buys them. They will be in one or more of the following categories for example: extraction industries, transport, energy supply, information and business systems, industries making equipment for other industrial uses, manufacturing of consumer goods, chemical, or consumer goods themselves.

A market study should reveal why the purchaser finds imports more attractive than purchasing Russian products and what his future intentions are likely to be. Should the numbers and value look at first sight to be attractive then one should make an assessment of the detailed advantages of the imported product. They will be not only technical but also value for money, prestige, ease and safety in use, a history of reliability, good supply of spares, technical manuals, training of service personnel and a distribution network and so on.

The firm should resist the temptation to acquire a model, strip it and copy it in detail. This is what the USSR did for many years and the results are not good. Russia today is not Japan of the 1960s with its strong industrial base, design,

marketing technical and production capabilities. Japan then could afford to start with copying foreign models because it could improve them with its design inventiveness and could make them better through its superb production engineering and superior material which it could afford to import. Furthermore Japan had a closed market and could experiment with new products, observe their faults, improve them and sell them advantageously abroad. Russia is nowhere near that stage.

The best and most rapid route to competing with foreign imports is to do what the British have always done, namely to invite one of the best foreign firms to set up in their country. Sometimes the foreigner sets up in a brand new factory, but this is expensive and suffers political and economic risks; others collaborate through licensing an existing local firm. They may begin by letting contracts to their chosen potential local partner to make components for them. Their aim is not primarily to get machining done more cheaply but to test the abilities of the local firm to respond to western requirements of quality, price and delivery. If satisfactory, such work may lead to the local firm making, assembling and servicing the foreign product in the fSU. The goods may also be exported to neighbouring countries, using the sales network of the foreign partner. There are already many examples of this activity in firms throughout the fSU working with foreign firms, especially in telecommunications.

This is an obvious route for the Russian MIC factories and is also attractive to the foreign firms. The MIC gain products that are already selling or likely to sell in the fSU; at the same time the MIC learn the successful ways of their partner in business whilst he gains a foothold cheaply and with little risk in the fSU market and in its traditional export markets.

The home business is likely to be more secure if the potential customer for foreign equipment is a foreign firm working either alone or in partnership with a local organisation. Payment is more secure. Therefore one should be aware of those firms. They will be working in extraction, oil and gas processing and distribution, energy supply, air, road and air transport, service industries such as restaurants, gas stations, financial services and information technology and perhaps entertainment. They will be pleased to have key equipment made and serviced locally by a firm whose products they already are accustomed to use back home or internationally.

The purchases of expensive consumer goods are very visible in the large stores in cities. One needs to study their sales to determine whether the effort of entering that field by the above route is likely to be cost-effective. Is it worth, for example, making washing machines or other household goods in the near future or to allow imports to continue to take the market? One has to consider that the longer a brand has to consolidate its hold in the mind of the consuming public the more difficult will it become later on to dislodge it.

One might in such cases prepare a longer term strategy. This could be for a suitable firm to work closely with a local university or design bureau and jointly to learn the trade of designing such products for the market. Russian design for the military has been good but for everything else it has much to learn from the advanced industrial countries. This might be a suitable case for inviting foreign specialist design engineers to set up a product design centre, supervise its work in regular visits of short duration to enable the local designers to become independent. British experience suggests that this is not a rapid job; it may take about five years

for a design centre to grow within a mechanical or electrical engineering faculty. But the job will take for ever if it is not begun. There is a case for starting such a project as a model and then proliferating it throughout the major industrial centres.

Proceeding on such lines allows the MIC firm to create subsidiaries organised by product and by market area. These can be separated at first merely notionally without physical translocation. The process in British terminology is called "erecting Chinese walls" around the business activity; physically invisible but managerially separate and organisationally responsible totally for the success of that business. The advantage of doing this in collaboration with a foreign partner is that he will provide the managerial experience, train the locals on a day to day basis and on the job. This avoids the need to invite foreign consultants, who rarely have direct experience of doing a similar job but are only applying the principles and standard approach learned in business schools and which may be applicable and indeed successful in their own culture but take little note of Russian conditions.

If the financial success in the first endeavour is fed back into the company and not siphoned off by one means or another, the MIC firm can proceed to the next steps. It may be profitable to reorganise the production line for the joint venture, invest in more training for the key staff, supply means for better control of costs, work with specialists to create missing elements in the factory such as design, market intelligence, strengthen the distribution and after sales service, or advertising. It is advisable to follow the old military principle of reinforcing strength before spending time money and resources on another venture. Once one has begun to generate income reliably, the foreign partner will also wish to invest in further development and to encourage the local organisation to do so.

The generation of profit allows the firm to pay local and federal taxes; its developing success should be followed by serious talks with the local authorities to deal with social problems. These will include taking over the creche, medical care, some housing and other social service which are a burden to the firm, paying for counselling and retraining of redundant employees. For example many technical and production personnel will not be needed as production becomes more efficient, but there will be a shortage of people in marketing, sales, purchasing, quality assurance, service and design and advertising. Some should learn foreign languages, especially English which is increasingly becoming the common language of international commerce.

The directors should look carefully to see if it really is necessary to keep all the secondary operations that have grown up over the decades. A company making machine tools does not need to retain a plastics moulding shop for the few components using those materials. Nor does it need to operate a sheet metal shop for the casings, or an aluminium extrusion shop to make the sections for the instrument cases. These are expensive facilities which will be under-used and probably ill managed and maintained, to judge from many inspections in the MIC. The General Director would be well advised to turn such shops into separate small businesses, to find a suitable person to run each one on profitable, commercial lines and tell him to look for business in the region. That is what happened in a factory making ammunition for small arms in England when it was closed. The foreman welder was trained to run his workshop as a small business, the same happened to the press shop and moulding shops as well as to the maintenance electricians. They continued to serve the remaining activities on the site but also discovered other customers within the city. In Kaunas, Lithuania one or two such "spin offs" were also successful. One firm became so strong that it ran a virtual

monopoly; a second firm was established in competition after discussion with other factory directors and the city authorities.

In this way the monolithic factories of the MIC can be transformed into smaller, live businesses. Some of them will produce complete products, particularly with foreign partners. Others will act as sub-contractors providing specialist services to the primary industries and to others in the region. They will act in several ways, some providing components and yet others concentrating on particular processes and materials. They will evolve naturally rather than by central edict. Such developments form a natural base for legal, profitable privatisation, with owner managers having the incentives to develop their firm rather than to enrich themselves by short-term and sometimes dubious means. In this way the Russian Federation can slowly move to a greater degree of successful privatisation, with the state retaining a golden share to retain control of prime contractors, especially those in the defence sector, until they are in the hands of responsible people with the long term interests of the firm and the national economy at heart.

Another important step will be to close hopeless sections of the business. Mostly the buildings are poor and should be demolished. This will allow the remaining factory activities to be laid out more efficiently and will undoubtedly some free land. This should be studied and made attractive if only to instil a sense of pride in tidy working; sloppy surroundings lead to sloppy work. Some of the land may well find other uses especially if, as is so often the case in fSU, the works is in the middle of a city. Perhaps as in USA or UK it should be sold to a developer for a hotel, a restaurant, sports and leisure centre or for housing. The firm will need to engage competent agents to represent them to ensure that they do get a fair return. If such steps are repeated, the firm will acquire in a few years all the attributes that will turn it from a mere assembly and manufacturing shop into a fully rounded firm with all the attributes that make up a commercial organisation operating manufacturing processes to satisfy its commercial objectives.

The process of becoming partners with foreign firms that can bring well regarded, branded goods into the market of the fSU may have to begin by a modest step of acting as sub-contractors to those firms. Initially the local factory may have to demonstrate its abilities to assemble products to the required quality standards, to the contracted time and to the agreed price. This should then lead to manufacture initially of the simpler components and eventually to everything that is required. However the foreign firm may still have to supply western components and materials, either to ensure inter-changeability in the former case or to ensure materials of the required properties when Russian materials are not available to the right consistent standards. This kind of sub-contracting has been seen as a good first step to earn factories of the MIC an income from abroad, not only for its own sake but because it enables the local firm to learn the ways of successful firms in a world market. In return the overseas customer acquires confidence in local performance which it can improve by close collaboration. Such customers may become partners.

This stage may be followed by the local firm contributing technology and design ideas. Russian design engineers have not been able to produce well designed civilian goods because of the absence of the very close relationships in that field that they have enjoyed and worked in successfully to produce good designs for the military. The full potential of these designs has not always been realised on a commercial scale through defects at the stage of industrialisation. These deficiencies are likely to be overcome by close collaboration as described here.

Certainly the experience of the few western firms working in, for example, the oil and gas industry and in packaging have spoken well of the Russian products they use and of the personnel with who they work.

These firms and personnel need to acquire the culture that allows them to seek and get excellence from their own work and to get it from their suppliers. They should learn this from their foreign collaborators.

Key National Programmes To Improve Industrial Performance

One often hears complaints that the reconstruction of the MIC requires a closely worked out Plan from the top of the Russian Government. This breeds the suspicion that the factories will do nothing until such a Plan is produced. Russian history is full of "plans" and their lack of actual fulfilment but only in speeches. They remain "castles in the air". Far too many pronouncements of government officials, economists and factory directors demonstrate the continuation of dependence in the minds of senior executives on government and central action and financial support for the vital sectors of the economy. They should be thinking of earning a living by their own actions, creating with other financial and commercial structures the necessary means of financial, commercial and technical support to enable their customers to pay for their products. Until they do these things for themselves the economy will not improve.

This paper has surely demonstrated that the factories can do much to help themselves. There is, however, an undeniable role for government not only to create the ambience for successful business but in seeking to mend the basic deficiencies inherited from the Soviet past which the factories by themselves will find hard to achieve. These are simple to state.

A national programme is needed to identify and gradually improve the range and qualities of engineering materials to bring them up to the best world standards. This process in Britain took a decade or two.

A study must be made to determine the strategy for producing electronic chips. It would make sense for the Russian Federation to make a wide range but of competitive quality. Their poor quality, as well as that of PCBs and their underlying composite materials, prevents Russian electronic hardware from competing with the best elsewhere. They should probably decide, as has much of the rest of the world, to buy advanced, large memory chips as well.

The integration of total design into the industrial firms in the English sense, rather than that purely of aesthetics, into product planning and marketing is essential. This will necessitate changes in engineering education and in the organisation of design away from separate institutes into the commercial enterprises.

Another programme is need to train people in quality assurance. This goes well beyond the adherence to international standards such as the ISO 9000 series which provide merely the routines of a paper procedure. Following them in a bureaucratic manner can lead to failures as has been shown many times in the West.

The country is very short of people who really understand the processes of marketing, creating and evaluating business planning as well as measurement and

control of costs. The central institutes charged with commercialising the MIC should themselves become expert at these matters. They will then be able to act as internal consultants to the MIC.

Another area of importance is to improve the capability of the country to design, run, monitor and commission major inter-disciplinary projects in civilian fields. It does not seem right that Russia should continue to import "turnkey plants" and to employ foreign consulting firms to manage projects in railways, chemical plant, airports, hotels and so on. They have demonstrated an ability in the military field in spite of the handicaps of materials etc that they face in industry. It is surely credible that once the designers establish high standards for everything that goes into a product and project, the standards and high culture will permeate backward into every layer of supply. But this process in order to succeed requires the abandonment of much of the previous attitudes. These include a demand for speed, prestige gestures, and heroic dramatic gestures. Revolution has to give way to industrial Darwinism, slow steady evolution. The old order that permitted amateurs to give orders, to meddle and to hector and criticise, equipped merely with social and ideological credentials, will have to give way to professional managers properly educated, trained and motivated to run a business. Purely technical skills are not enough, as we have discovered in Britain. Engineers need to learn to run a business however technical it may be; technology has to be subservient to the needs of the market and of society. This change also requires changes in the education and experience of engineers at work. The steps taken to provide these changes are set out in the paper referred to above.

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A Practical Programme For The Reconstruction Of Russian Defence Factories

Theodore Levitt, Founder of the Harvard Business School developed the concept of "marketing", which Levitt defined as *"identifying, satisfying and stimulating the needs and wants of the customers".* Marketing therefore becomes the basis of a business strategy for a firm. This approach to business was very different from that of the engineer who moved in a closed world of the manufacturing workshop. His skills were devoted to making the product as best he could, as cheaply and as quickly as possible. It was usually someone else's job to sell the goods and to beat the competition. The need to make things at the lowest possible cost commensurate with competitive performance led to two consequences.

1. **Standardisation of product to allow repetitive processes of manufacture on the same equipment**. This is one basis for the idea of "economy of scale". It produces more throughput, income and possibly profit for the same investment in equipment and other fixed costs of the factory. Perhaps the most famous example was Henry Ford's dictum "You can have the car in any colour provided it is black". People soon got bored with having the same car as everyone else and one which was dictated by the factory's stylists or worse, by the wife of the president of the company. As is well known the American car industry had to learn quite quickly how to produce cars with a huge range of detailed choices in engine size, colour, interior fittings and even body styles. Competition led to variety and hence to choice. Consumers learned to choose and to examine a wide range of attributes of competing products partly through the Consumer Movement which started in USA and became prominent in the 1950s. Various specialised magazines reported the thorough testing carried out in its own laboratories. Safety of products became a feature, especially following Ralph Nader's seminal book *"Unsafe At Any Speed"* which concerned the American car industry.

Standardisation of product and dedicated processing equipment are cost efficient provided that the product range is likely to remain fundamentally unchanged over a long period. This has to be long enough to make enough profit to survive, to pay for the dedicated tools and fixtures, to amortise the equipment, to replace it with new equipment and indeed to create a new layout for the factory itself when the product radically changes. But ultimately, it makes for stultification of development and competitiveness. Much effort has gone into allowing modern industrial processes to produce varied products cheaply.

Perhaps the earliest example of such a dedicated production system was invented by Sir Mark Isambard Brunel and made by Henry Maudsley at the turn of the 18th/19th centuries. The huge increase in ships brought about by the wars against the French led, amongst other things, to a massive demand for wooden blocks for hauling the sails. Brunel created a range of what today would be called specialist machine tools, each performing only one operation. The work piece was then transferred by hand for the next operation. The process was used in Portsmouth Dockyard and provided blocks of excellent quality, far more quickly and cheaply than the old hand methods. Of course, when the demand for blocks waned and disappeared, so did the need for Brunel's production machines. No amount of ingenuity could provide them with economical, alternative use. The equipment is on show in the Naval Museum in Portsmouth to this day.

2. **Specialisation of manufacture within a firm**. This concentrates the skills of the firm on the manufacturing technology and on its understanding of the materials processed and stimulates its evolution in a way that is not so easy to attain if the process is located within a general factory with a wide range of skills. The concentration of skills to a core skill leads to such firms becoming sub-contractors providing components to the makers and designers of main equipment. The business revolves around a keen understanding of the customers' precise needs and the ability to respond with the best answer to them. Such suppliers work closely with the customers' design and purchasing staff, providing advice as to the best solution. Thus a firm with skills in plastics moulding would not venture lightly into die casting metals or glass. Furthermore such a firm might restrict its market to supplying the car assembly business, making valves for aerosol sprays, or micro engineering components requiring ultra fine tolerances. But a firm specialising in metal cans for packaging might contemplate broadening into providing packs of other materials through its detailed understanding of the packaging needs of a wide range of customers. It might then acquire another firm working, say, in paper or plastics packaging which had the necessary marketing, technical and production skills. It would be folly for a firm making plastics components for the car or aircraft industry to venture into a new market for plastics packaging merely on the basis of its knowledge of plastics processing technology without the marketing knowledge and reputation. A firm making winding machinery for paper and plastics film and sheet is unlikely to make equipment that may look similar and which it could make for other industries. The same is true for wood working equipment which looks very similar to metal cutting machinery; probably the best suppliers of the former are to be found in north Italy and they do not venture outside their niche. Restriction of activity by one firm to a type of market is very common.

A major holding company will group its subsidiaries according to the markets they serve rather than by the material they process or by type of product or manufacturing process. This provides the essential dedication to, and understanding of, customers' requirements and culture.

Commercial Understanding

Each kind of business is a closed, rather introspective world with its own language and culture; it takes a long time for an outside firm to understand its needs, the way it works and the outlook of its people; much longer than to acquire a technology new to the outsider. Selling instruments to a hospital, a university laboratory or to a power station requires detailed knowledge of each sphere; so a firm making instruments which can be applied to each requires to set up specialist sales teams for each. This leads to diversification in detail for each application and therefore to dedicated designers who specialise in particular products for particular customers and even in a limited range of components. The logic leads ultimately to the creation of separate businesses for each market sector served by the company.

One English firm which specialises in plastics moulding has a separate division for supply of the taps for delivering beer in Public Houses. Beer often is supplied by the breweries in barrels and must be delivered to the counter in the bar under pressure. There are many kinds of beer and they often require different conditions of delivery to produce the best results in the glass. The British, like the Belgian, beer drinker is very fussy and will discourse for hours on the merits and faults of particular publicans in the way they keep their beer. The taps made by this company have undergone development in detail over thirty years and the firm has an unrivalled position in their supply not only in Great Britain. They provide an excellent example of identifying a niche for themselves and setting out to excel in its

satisfaction. Even such a mundane product deserves specialist attention, collaboration between the customer, sales force, design and manufacturing engineers. Indeed it has involved not just plastics processing skills but some quite interesting hydrodynamics.

Specialist commercial expertise is at least as hard, as expensive and probably takes longer, to acquire than technical and production knowledge.

The Problems Of Defence Industries Facing Significant, Long-Term Reduction Of Demand

The main defence industries of the advanced industrial countries are in America, Britain and France. The industry is conventionally organised into:

1. Main contractors. These are self-contained commercial entities with their own marketing, R&D, design, manufacturing, purchasing, financial, marketing, sales and customer support sections. Their own manufacturing is mostly that of assembly as well as making the main components such as wings, hulls of tanks and warships.

2. Specialist suppliers of assemblies such as engines which form parts of the main equipment. These will also have their own complete range of commercial, technical and financial services. They will be organised to supply their products to civilian customers as well as their military ones. These are often separated for reasons of differing customer culture, their "way of working", as explained above. Another example will be a separate division supplying wheels, brakes and tyres for aircraft, both civil and military, within a firm supplying tyres for automobiles. Boeing, Lockheed, Aerospatiale and British Aerospace make military as well as civil aircraft but in separate divisions which will deal separately and independently with the same suppliers to both.

3. In turn these firms as well as the prime contractors will buy a wide range of detailed products and services from specialist suppliers whose products are applicable to any industry. In both the cases of secondary and tertiary suppliers, the specification for purchase for military application has often been different from and more complicated than that for civilian use. This is often unnecessary but traditional in the purchasing system of the Defence Department of the Government. The practice is under constant review since it has led to unnecessarily expensive products for the military. It is said, perhaps anecdotally, that the printed specification for a new frigate when distributed to all concerned, weighed more than the ship itself and that the specification for fruit cake for supply to the US Armed Forces runs to over 200 pages. As a result of over-specification with its resulting procedures, a wooden seat for a lavatory cost the US Dept of Defense over $200. Such revelations may amuse the outsider but they pervade the culture of suppliers.

The Problems Caused by Long Term Reduction in Military Procurement

These are most acute for the primary contractors who supply the main battle equipment and defence systems. They face competition within their own nation as well as from the leading foreign firms. Modern weaponry is now so complex, expensive and takes so long to develop that the leading firms are increasingly seeking to rationalise their affairs. Their governments state that they will no longer give their national firms preference but will buy in the best market, provided that

their national security is not threatened in times of crisis. This may be the stated view but when it comes to practice, Governments still favour their own national suppliers. They have, after all, to consider the effect on employment and the political repercussions of the alternative policy. Cold financial logic in the short term does not always lead to the choice of the cheapest and the product most desired by the armed forces.

The defence industries in these countries have already contracted significantly since the end of the Cold War without causing problems on a national scale. Defence procurement has occupied a relatively modest role; the British figure for the past decade is about 40% of the total defence budget and equals about 2% of GDP; the defence industry directly employs less than 250,000 people. If this figure is again reduced, say halved, in the next few years it must be compared with a total of about 2,250,000 unemployed people. Many of these result from the closure of firms in unprofitable industries, including the "sunset" sectors such as coal mining, steel making, ship building. Western countries have a highly developed system of social support for unemployed people including financial support, counselling and retraining for new careers. As we shall suggest later, the problems of the primary defence contractors can be and are being dealt with in ways similar to those which face others which can no longer earn enough to sustain themselves. Contraction leads to local or regional problems, especially where the firms are the major employers in an area of otherwise low employment. It does not present a national problem.

Analysis of western experience is based upon the three categories of contractor mentioned above.

The Prime Contractors

These bear the main brunt of the problem. This is because:

1. They have little or no experience of successfully supplying civilian markets or indeed of the marketing process itself in any meaningful manner. This is because the market is fully defined by the procurement branches of the armed forces and because the specification of the product is often also fully defined by them. Overseas marketing is, of course, a matter of understanding the needs of customers but largely the weapons offered are those which have been supplied to and proved by the national forces at home. Indeed that approval is an important part of the sales appeal to countries abroad, within NATO forces and to third world buyers.

2. Defence contractors are, by the nature of their relationship with the military, high cost producers. This is partly forced upon them by the military procedures and requirements. In the end result, the culture of primary defence contractors is inimical to provision of value for money and therefore to their ability to compete with firms already supplying civilian markets. The firm and its staff have become accustomed to a minor role for cost and money; if the firm presents its costs skilfully, the military will provide the money. Furthermore, the established firm has a long lead in understanding and satisfying the needs of its niche markets; experience shows how hard it is for a newcomer to catch up with him.

3. Defence production systems are dedicated to the needs of the military products. They are usually of the most advanced type, sophisticated and designed to produce the highest qualities and finest tolerances to give the long term reliability required by western procurement doctrine. Western countries have not chosen to afford to

order masses of main battle hardware, designed for a short active service life and to be expendable in times of war. Neither have they planned to keep the majority in reserve for use in times of war. Reserves are modest and front line equipment in peace time is used for training and subject to maintenance engineering at appropriate intervals. Western equipment tends to be complex and therefore takes a long time to emerge from the design to the delivery to the active service units. This is aggravated by changes in specification during the contract by the military. Such changes, however, provide additional income and profit to the contractor.

The consequence is that military technology through the design and production process is apt to be somewhat behind the latest that is available in civilian products. This is especially true for electronics which are subject to rapid development of innovation and since they are applied on a very big scale can be put into production, application, test in the field and improvement quickly and cheaply due to the 'economies of scale' which are not available in military uses.

4. The largest and most powerful defence contractors, with their long experience and important research departments sometimes consider that they know better than the armed forces what they need and should have. On occasions in the 20th century in Britain, they have been proved right. Some of these firms sell equipment such as radar for civilian as well as for military use. They have been tempted on occasions to consider that their civilian customers should also buy what they, the contractors, have to offer. This is typical of the lack of modesty and understanding of the attitude of firms, which is characterised by the term "war socialism" but also much of western industry, notably in Britain between the world wars and immediately following the second one. This attitude is, of course, in violation of the fundamental principle of a market economy as defined by Theodore Levitt.

Thus primary defence contractors are at a disadvantage when contemplating a switch to designing and making civilian products competitive in the market. They lack the essential commercial skills, experience of evolution of civilian goods and services and the essential discipline of competition in price that forces designers and manufacturing engineers to produce value for money. They are high cost producers. It used to be said in Britain that *"an engineer can make for a penny that which any fool can make for a pound"*. Engineers in defence industries almost reverse that aphorism. For all these reasons western experience rarely provides examples of even attempting to "convert" products and services to civilian uses.

How have the primary contractors tried to solve their problems?

Their methods are the same as those used by other firms in a market economy. Most of them, looked at historically, are in a continuous state of change. The ownership of firms changes, individual firms seek association with others that will provide better business, marketing, financial sense. Others seek to expand their services to a particular market, look for firms where their abilities complement and where management skills lie. Others look to acquire firms with a good future in a niche that the buyer understands and where he can improve the performance of the latter with his superior management abilities and techniques. At the same time, successful firms regenerate their factories, rebuilding old ones, providing better layout for improved efficiency, better safety, environmental and ecological protection or closing those where such investment is unprofitable.

The primary contractors have learned to know their own limitations very well, and to come to terms with them. They also are aware that their Governments are not going to favour them for long, nor provide them with defence contracts that can be placed elsewhere more favourably to the public purse. No one expects to be subsidised for long to remain unprofitable and therefore to remain a burden on the national economy.

- They have decided to stay within the area of their core skills both commercial and technical, namely in defence and closely related fields such as civil aviation.

- They are placing more outside contracts for many secondary activities, such as design and manufacture of components and assemblies, procedures for testing materials, semi-finished and complete products, maintenance contracts, computing services and so on.

This **sub-contracting of secondary activities** has long been practised by advanced industries such as chemical firms as well as defence companies. Such activities as cleaning, canteens, medical staff, security, transport, travel bureaux which once were carried out and supervised by company's employees have been given to outside firms specialising in those jobs. The firm does not begrudge the profit on the work being taken by the contractor, who normally can demonstrate his ability to provide the service better and cheaper than the firm could for itself. This is because he specialises on that service and is not diverted from it. Similarly the firm can concentrate its efforts and skills on its real business.

The contraction in employment is handled differently according to the national culture. In France, defence workers are state employees and it is hard, if not impossible, to release them against their will. Consequently the firm relies on natural wastage through age, voluntary retirement and support through training and financial compensation for those who leave of their own accord. In America and in Britain defence employees work in the private sector but the State also provides valuable counselling, re-training and support for those who are forced to leave.

- They seek new alliances in the defence fields, both within their own country and internationally. Thus British, French, German, Italian and Spanish firms combine to offer rival tenders to NATO countries and of course for ultimate sale to third world countries, for battle tanks, helicopters, warships, surveillance and very long range transport aircraft. Others, including American and British firms, now collaborate with advanced firms in aerospace and avionics in the fSU. In the latter case, the West seeks to benefit from complementary ideas such as well proven engines for space rocketry, novel means of variable direction thrust for jet engines, a combination of GPS and Glonass, giving all partners additional benefits that were not available to either.

Finally, in the last resort, when no profitable, viable alternative is open, firms close their operations, especially the design and manufacturing facilities. In America, the Federal and State authorities are obliged by Law to offer assistance in such cases. They study the possible alternative uses for the site and buildings. These have been turned into such varied uses as sports complexes, health centres and prisons. Sometimes the buildings cannot find alternative profitable uses and are torn down, leaving the land for redevelopment. Retraining, counselling, help with relocation, schooling and financial support are all provided to those people who become unemployed. In Britain there are similar provisions, but local redevelopment is left

more to private enterprise and to regional rather than to national Governmental authority.

Land, buildings and equipment that has no potential to generate an income - a profit in English usage - in the short to medium term, has no value. Value can be generated only by finding alternative uses for them which will have a good chance of generating profit, which can be properly regarded as a return on the investment. This is noticeably hard for people brought up in the Command Economies to grasp; many, even in 1996, still believe that they have an asset value even when no profit is in sight for their redevelopment.

A market economy is efficient at redistribution of resources. A redundant factory can be turned over to a developer, split into small units suitable for use by very small businesses, some of whom can be manned by trainees formerly employed in the old factory. Unused equipment can be sold at auction or to specialist dealers and used in other businesses. There are many companies who buy and sell used equipment; much of that which is sold by modern industry, especially the defence firms, is up to date, even the latest in technology and in good condition. In this way industry regenerates.

Privatisation of loss making or contracting state-owned industries, whether in defence or civilian sectors, has not of itself been a positive factor for regeneration. In Britain where there has been much experience of privatisation, the step has usually been preceded by years of preparation to turn a loss making firm into profit. Otherwise it would not attract investors. The key to successful regeneration lies in finding people who are competent to run the firm in a market economy to take charge. Changing the structure of the ownership, providing large loans or state subsidies is simply a waste of resources without that competence. Good people may be able to make a success of a poor structure, but indifferent managers will ruin a well financed and well structured firm. Sometimes the existing managers buy the firm from the state or from a holding company which has, in the opinion of the managers and of their financial backers, handicapped its development. Such cases are not frequent. The road to success lies firstly in getting good top managers; once they have begun to demonstrate that they can run the business at a profit then investors may be attracted.

The secondary and tertiary producers do not experience to the same degree the same problems as do the primary defence contractors. They are already serving civilian markets. Good firms have always balanced their defence and civilian sales to provide an adequate hedge against a downturn in any sector. They know that defence cuts can be made arbitrarily by Government to which civilian markets are, on the whole, less subject. They keep a careful eye on all the factors that may affect their business, plan and act accordingly.

To the extent that their contribution to total sales of the primary defence contractors is a high one, it is correct to say that the operations of the secondary and tertiary firms in the defence industries are, and always have been, dual purpose. There may be small but significant variations in design for the military but that is also true between civilian customers. The firms choose their production equipment to cater rapidly and economically for such changes and to be able to supply small quantities. Of course, basic components, like the nuts and bolts, are made to standards. Most designers, whether for military or civilian purposes, will use standard components from the catalogues of suppliers rather than to demand "specials". Standard elements are readily available, cheaper and have a history

against which their quality and performance can be easily judged. As products evolve, the designers will try to maintain the use of standard components for the above reasons and also to allow cheaper, uninterrupted production as well as interchangeability in spare parts for customers. The discipline of value engineering will provide a motivation for this. New products coming on the market may therefore contain a large proportion of old components but still provide new features and a new look. This is done by restyling the case or housing, changing shape or colour, adding new features and their controls and so on. A good designer provides in advance for such changes by allowing them to be easily, quickly and cheaply incorporated in the moulds, tools and jigs. Computer aided design and manufacture provides this facility with some ease.

Modern production equipment is also designed to be flexible allowing families of products to be made within a machining centre. Such equipment is usually equipped with self measuring and correcting systems to take account of wear of tools, changes in temperature and so on. Some flexibility of course is also available from the familiar, general-purpose machine tools with which older factories may still be equipped. The disadvantage of the latter is the need for a lot more mechanical handling between operations, increased likelihood of stoppages with consequences for work in progress, pressure on workshop space, layout of the factory and accounting for inventory. Really old factories located on more than one floor also have many significant disadvantages. Very few of these are to be found in the West.

The message from western experience is that it is flexibility of mind, a broad experience based on understanding and successfully serving the market that determines the ability of people and firms to cope successfully with changed circumstances. Neither investment in new equipment nor subsidy is an adequate substitute. Change of ownership and structure of shares of itself does nothing useful. Leadership, with imagination, ability to choose, train and motivate a team to seek excellence and to perform in the required culture of excellence in every aspect of the business is indispensable.

Regeneration Of Ailing Manufacturing Firms In The West

Regeneration of a defence firm in trouble is no different in principle from that of other firms. It has to restructure itself to earn enough income through sales of its goods and services to survive. In Britain we have had a lot of painful experience since 1945, especially in the manufacturing sector. To put it briefly, the prevailing culture from then, certainly till the early 1970s, in many sectors:

- Continued that of War Socialism, where production was directed to military ends, and where sales, marketing, control of costs were unimportant to the degree that the skills in these areas almost vanished. Nationalisation of the "commanding heights of industry" by the incoming Labour Government reinforced the bureacratisation of industry and of business in general and its control by people even further removed from an understanding of market needs.

- Was rather self-satisfied. Having 'won the war', many people concluded that British engineering was excellent and made that victory possible and would therefore automatically be competitive in the commercial world to come. However they overlooked many facts, including the massive contribution of

American equipment, materials and manufacturing skills imported to Britain. Objective assessments, such as those found in Corelli Barnett's books, are less complimentary. As has been observed in the case of the powerful defence contractors, many firms selling to civilian markets were able to operate a "sellers" market by one means or another. These included Imperial Protection, which reserved certain markets for an oligarchy, the growth of powerful manufacturers and their trade organisations and the relative weakness of the average consumer. The ability of the seller to control the market after 1939-45 was reinforced by several factors. These included shortages of everything, continuation of exchange and import controls, a population with severely restricted purchasing power, a weak retail system which could not exercise any influence over its suppliers who could and did dictate what they should sell and at what price. These factors act in favour of the producer rather than the consumer regardless of the nature of the political-economic system; they are true for a socialist command economy, a capitalist system whether loosely or closely regulated by government. The culture has a stultifying influence on innovation in commercial as in technical aspects and is resistant to change over long periods.

- Tempted people to think that they could regain their world markets simply by following the traditional, pre-war methods of doing business. I well remember, having been appointed to an Admiralty engineering research station on my return from the Pacific Fleet in September 1945, being told by the Chairman of a world famous Clydeside shipyard - "British is best and Clydeside is the best of the British shipbuilding". One of the "Monsters", a liner which was the pride of the British Merchant Marine, was built in his yard; its boilers required frequent replacement of the water tubes which burned out due to a design fault. He was horrified when the team, of which I was a member, recommended to the Admiralty that a new class of Fleet destroyer should be fitted with boilers made by an American company which had done its hydrodynamic and heat transfer calculations properly.

Furthermore, when Marshall Aid was offered by the USA to rebuild Europe, the British used the money for the wrong purposes. Aid was squandered on

- Supporting the Pound Sterling as a matter of national prestige.

- Maintaining imperial links and the military forces to defend them, at a time of retreat from Empire and a realisation by New Zealand and Australia that their destiny lay in the Pacific and with America.

- A massive house building programme "fit for heroes to live in".

- A massive programme of social welfare.

In those days, British engineering firms emphasised in their advertisements their size, showed photographs of the huge sprawl, of the batteries of machine tools standing in neat rows and of rows of draughtsmen in white coats standing in front of "Double Elephant" sized drawing boards.

The directors pressed continuously for more productivity from the work force, using the methods of Frederick Taylor. This caused constant strife between the workforce and management. The directors overlooked the fact that in efficient factories the cost of raw materials and bought in components was far greater than their direct

labour costs. I remember that in one factory for which I was responsible, the works director complained that he did not understand why his factory was uncompetitive when he paid the lowest wages in the industry and in the district. It did not occur to him that the layout of the factory was chaotic, the use of resources was wasteful and that the processes all required much manual labour, especially in moving things around the factory. Such work is costly and adds nothing to the value of the product.

The supply of water in Britain was cheap, due to decades of under-investment by the municipal authorities who owned the water supply companies and who ignored cost reduction and efficiency because they were publicly owned enterprises not subject to the discipline either of competition or of proper audit. The Treasury had other priorities. Fuel was cheap immediately after the war; not until the shortages as a result of the hard winter of 1947 did the Government embark on a sensible policy of fuel efficiency measures which it suggested to industry and gave them financial incentives for saving energy. Land on which the factories were located was usually owned by the firms and there was no pressure on it for re-development in those days. Land values and rent were therefore low enough to be ignored by those who were disposed to do so. The buildings were often very old and their value had been written off the assets in the books long before. Many engineering firms were given by the Government practically for nothing the machine tools, some of which was the latest from USA, that they had acquired during the war. As we have noted above, there was little major modernisation in those industries post war. Some of the equipment dated from the first world war if not earlier. This was certainly true in the shipyards, even in the tool room, in which I was involved as a Naval Engineer Officer.

So many engineering firms, unlike the chemical industry, ignored for the crucial post-war years most costs except that of direct labour.

It was not easy to find engineering firms which could supply technical products to fine enough tolerances and of high quality of surface finish or a wide variety of products. Standardisation and "take it or leave it" were comfortable legacies from the war years. For example, when I was a project engineer in Imperial Chemical Industries (ICI) in the middle 1950s responsible for new chemical plant, it proved impossible to obtain in Britain the required specialised steels or glass lined pressure vessels to specific design. The items on offer simply did not suit and the suppliers were indifferent to the needs of its potential customers. As a result the goods were bought abroad.

The unjustified self-satisfaction, not to say "smugness", of British engineering led to loss of overseas orders as well. For example when ICI licensed its high pressure process for making polyethylene in the USA, its suppliers of special products working at 2000-3000 bar assumed that the American licensees would have no choice except to get those products from Britain. So they made no specific sales effort in USA. Their prices were high; consequently some American firms worked out how to supply the same products and did so more cheaply.

In many firms the Works Manager decided and announced the costs of making the product, it was someone else's job to add a profit and to sell in competition.

The Germans and the French used Marshall Aid to invest in modernising their industry and infrastructure, thus creating the foundations for a strong economy. One this was gained, social benefits could be afforded and began to flow. Their

income per capita has been for some years significantly higher than that of the British.

Partly as a result of these factors, Britain never regained its pre-war share of world trade in engineering; this share has steadily declined since then. More advanced as well as quite simple products are imported than previously. Many firms have disappeared, gone into liquidation whilst others have been revitalised by radical changes in the top management, both foreign and indigenous. As a result Britain in the 1980s and 90s has seen some highly profitable manufacturing firms capable of surviving, competing and growing in the world economy. But the process from poor performance to success has been a long one; in some cases the changes have taken 10-20 years. These have only been possible when the firm demonstrated objectively that it had a future in the market and that the efforts necessary for it to perform well would be justified and that the investment would be repaid fully.

Taken all in all, these attitudes were the symptoms of what one might call the British Disease. This illness continued well into the early 1970s when a new realism and a new culture of business began to take over. The example of this history is important to the fSU; what was evident in the Soviet Union, and in the current continuation of the culture of the Command Economy in Russia today has many close parallels with the post war British disease, as Russian readers of the above will recognise.

What have been the steps along the road to the regeneration of British engineering industry?

From the preceding discussion it is obvious that the first issue is to analyse very carefully the actual and potential position of the firm to perform satisfactorily in the marketplace. Has it got a niche that is worth defending and investing in for the future? Has it got the capability to do so with its present basic range of assets? Let us emphasise Theodore Levitt's points:

> *"The view that an industry is customer satisfying, not a goods-producing process is vital for all businessmen to understand. An industry begins with the customers and his need, not with a patent, a raw material or a selling skill".* He might have added *"or with a factory and its equipment".*

Changing attitudes from those of a goods-producing culture in times that allowed a sellers' market to one of satisfying customers was the key and the first aim of every management that set out to succeed in a world that had largely absorbed those lessons and changed the circumstances of trade within which companies had to live if they were to survive. Since the ability to serve a market has many facets, clearly the contribution of each to success or failure has to be examined. This is not the place to do so except very briefly. Books on marketing will repay study; so will my own publication published in Russian by the Kyiv International Civil Aviation University.[1]

One has to look at the requirements of the market as it develops, study the reasons for relative performance of others serving the same needs, not only with similar products but with different technologies and solutions. One has to work out what has to be done to become competitive in every field: share of the market, design,

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[1] Inzhener Rynochnoy Ekonomike, pub Kmuga, Prospekt Kosmonavta Komarova, Kiev.

quality and reliability, costs and other aspects of manufacturing processes, efficiency of distribution systems, after sales service, competitive pricing, adequacy of profit to sustain the direct and indirect costs as well as to reserve sums for re-investment for development as well as to pay rent on the financial assets employed, including of course dividends to shareholders. It may be that the market no longer requires its products, a whole product range may become obsolete, succeeded by better products or a totally different means of satisfying the market. Examples, of course, come easily to mind.

When motor cars superseded carriages the need for horse whips declined. No amount of work to reduce their costs of production and therefore lead to price reduction would stimulate sales to the old levels. Large heavy motor-bicycles, which were the main ones in their field up to the end of the second world war, were superseded by the small, light Italian motorscooters which were not only cheaper to make and run but became a cult article amongst the young. They still are. The Italian scooter was based partly on the Piaggio aircraft firm which made small auxiliary engines for aircraft. They adapted them to power the Vespa scooter which they made jointly with Fiat. This trend was followed by the Japanese who developed the idea into the more conventional image of the motorbicycle. The old European versions had to redevelop their range, styles, designs and appeal to gain a share of the total market. The heavier, more powerful and very expensive motor-bicycle has a niche in the market but not a mass market as formerly.

Most new products come about from identifying a need rather than being driven by new scientific or technical advances. It follows that the closer it is to the users the more accurately will a firm identify new opportunities. Many new ideas originate in the users' organisation which may be a hospital, laboratory or user industry. It is in their interests to work with firms who can develop the innovation and market it successfully. Hence the value and mutual advantage of close vertical relationships between user and supplier. These sometimes result in joint ventures or in the user becoming a shareholder of the supplier. This has been common in the German chemical industry and its engineering suppliers, which indeed may have begun life as a small part of the former and "spun off" to become wholly or partly independent, serving not only their former firm but also its competitors and perhaps even more widely.

But suppose that the analysis of competitive position shows a continuing need for one's products which are not doing too well? What then? Each company that requires regeneration has its own culture and negative features which militate against survival and success. These have to be analysed in detail, without vanity or illusion.

The British Tyre & Rubber Company

The example of the turn around of this company from loss to significant profit is very instructive.

During the war the British Tyre and Rubber Company made a range of tyres for automobiles, belting for coal mining, hoses for a wide range of purposes and faced, like other firms, the need to convert its outlook and commerce to an increasingly competitive, civilian economy. It was a licensee of the large American company B F Goodrich and was gradually losing its market share to the major British tyre manufacturers. Being a licensee, it was dependent on BFG for its technology, but

as is so often the case it did not receive the latest and was thus always behind its competitors which had their own R&D laboratories. In the late 1950s the British Tyre and Rubber Company was a small, struggling firm gradually losing its market share to the major tyre manufacturers. It was not generating enough money to bring its tyre factories, then considered to be the main core of its business, up to a competitive standard. BFG furthermore declined to increase their investment. Its directors took a decision which was psychologically bold and radical as well as being unique in that business, to close the tyre business and to concentrate on regenerating the industrial products based on rubber. Had this decision not been taken the firm would have gone into liquidation in very few years instead of becoming one of the most successful industrial groups in the world. But that by itself did not address the issues of the culture of BTR, as it was then known; it provided the firm with a breathing space for the radical changes required to survive in this field. The mistakes as well as the wise business decisions of its subsequent history are instructive.

- The firm invited several senior people to join the Board who had come from Imperial Chemical Industries, a company that faced the full competition of dynamic foreign firms. The most senior replaced the old chairman whose experience, although also in the chemical industry, had been in a company that in those days had a near monopoly in Great Britain of its products. The next senior was the brilliant, retired research director and later chairman, of the plastics division of ICI, who had masterminded the development of its petro-chemical products into entirely new lines as well as being one of the discoverers of polyethylene. He invited me to join as technical director with the aim of evolving its products and processes.

- Another key appointment was someone with important commercial experience in one of the leading British firms. He was instructed to go to North America to assess the state of the industry there. The managing director told him: "If we do not look abroad we will not know how bad our own products really are." As a result BTR Canada began by buying competitive products locally and trading them. This had two effects. Firstly one learned what customers wanted and secondly the outside purchases were used to stimulate the old fashioned British technologists to produce competitive products of their own.

- One of the less successful appointments became, but only for a couple of years, a senior director. He, unfortunately, was not a deep thinker, but accepted the fashionable pronouncements of leading management schools, of which he was a product, and management consultants. It is noticeable that these firms tend to deal in recommendations that run in cycles.

First, perhaps, the firms are recommended to diversify away from their traditional lines, by buying into firms serving other industries. This might be supported by arguments that the fortunes of each sector run in cycles so that a business serving one will do well whilst the other is in downturn. The consultants having taken vast fees to advise a firm on purchases and diversification, this recommendation as a rule was followed, allowing for a suitable time for implementation, by its opposite, namely to concentrate on its core skills. This would be supported by arguments such as those set out above.

The director mentioned above followed the first advice, pronouncing a dogma that rubber products were old fashioned. Plastics were the modern polymeric materials with technologies similar to those for processing rubbers and which, therefore, BTR

could process and sell without problems. He acquired some plastics companies at a very high price from an entrepreneur with a flair for publicity. Some of these had the added attraction to him of serving the defence industries which were doing well in those days as well as being "high tech", with its appeal to a particular kind of vanity. Two of those firms were indeed doing an excellent job in niche markets but were too small to stand competition from firms that were no less competent technically and who could offer better service worldwide and better prices to the customers who were mostly large firms. *Suppliers must have sufficient importance to customers to be able to avoid having the terms of trade dictated to them by the customers*. These are usually manufacturers of primary products and have tended in recent decades to become powerful commercial entities. This kind of commerce tends to follow Pareto's Rule which states that 80% of the profits come from 20% of the customers. It was not long therefore before this group was sold to a competitor. Those firms serving the defence field had to be closed because of accountancy practices inconsistent with those of the MoD.

A second, fashionable recommendation from management consultants was to "divisionalise". This practice in essence allowed the management to operate a tree structure. The Main Board was supposed to make and oversee general policy, whilst the operating firms were grouped into clusters. These could be grouped by various criteria, the best of which is undoubtedly that of market sector served. For example one might have an Automotive Products Division, a Health Services Division and so on. Each would have a Divisional Board with a small secretariat with responsibility for business policy and performance of the firms in its Division. Finally each subsidiary had its own management structure, was responsible for its own affairs, was responsible first to the Division and then to the Main Board for performance and profitability. It submitted its business plans yearly as well as when necessary for special investment decisions upward.

This system was also put into effect; there is in principle not much wrong with it. But BTR was then far too small for the system to be effective and cost efficient. It was inappropriate at the time. Divisionalisation was incorrectly applied. The errors were threefold. First it was based not on markets served but on products, locations of factories and processes. Secondly the business plans were allowed to be too general rather than focussed on profit planning. Thirdly the monitoring system denied the local management the opportunity to be fully responsible for their actions and financial results. They were always supervised in too much detail and were led to believe that the holding company would cover their financial shortfall. Many of their managers never grew up to be mature businessmen, so they were not able to address the problems of performance at the time as well as the all important one of their ability to take further responsibility if and when the company grew.

The company was typical of many rubber producers of the time. The factories revolved around the carbon black kitchen, its drug room, mixers with an introspective language surrounding the compounding and processing. This made up the sum total of rubber technology; it was a black art - literally - kitchen chemistry like that of the alchemists, the medieval "priests of science" involved in the search for transmutation of base to noble metals. The application of physics, good chemistry, the science of the flow of non-Newtonian liquids, heat transfer and good engineering seemed to be absent when I joined the company in 1960. Even the design of the products themselves was based more on trial and error than on good engineering science. The factories were primitive and poorly laid out. This resulted in heavy manual labour to shift, for example, conveyor belting between operations and to the delivery stores. The equipment in the mixing rooms,

moulding, extrusion and calendering rooms was very old, based on half understood practice with no understanding of the principles of polymer engineering. Most of the personnel, who were rubber technologists, had no training or interest in the subject.

Consequently there was no understanding of the technical and operational culture required to improve quality, efficiency of use of all resources and to work for steady evolution of product and processes. This was my prime task. This was accomplished by motivating the small team of educated, enthusiastic people who had a wider education and by importing a few key people from outside. By applying the principles of polymer processing that I had helped to develop in ICI, the rubber processes were transformed. The products were far better, their dimensions became more accurate, the properties of the rubbers became more consistent and the productivity from the equipment and personnel dramatically improved; costs of course were reduced. Some modest investment in new equipment was involved and was afforded from savings.

The next task was to examine the utility and effectiveness of the 17 factories which turned out a mere œ15 million worth of sales every year. As a result some were closed, their production moved to other sites which were drastically improved. Practically the last available funds of the firm went into creating a modern mixing and calendering shop in the main factory in the north of England. This allowed the efficient production of rubber for a wide range of goods and processing of a wider range of materials which provided the basis for a competitive range of conveyor belting for use in coal mines, iron ore extraction and steel works.

This work was accompanied by a programme of internal training for factory personnel to enable them to understand the culture needed to be successful and to be able to contribute to a continuous process of improvement of profit through better products, more efficient and cheaper processing. The factory managers and workforce were given full responsibility for this work and could call on the central technical department for assistance. The factory management and technical centre of the company collaborated intimately in product and process development. This replaced the old system whereby only the technical centre was interested and responsible for innovation. That created a psychological barrier, the factory treating the centre and its ideas as unwanted outsiders which merely interfered with the established, familiar routines which required little thought and presented no apparent stimulus and challenge to the works' people.

At the same time the old Divisions of the company were simplified and reorganised into market orientated business cells with their own fully responsible business managers. These business management groups were thoroughly indoctrinated to perform through a simple but effective profit planning system and a method of accountability for promised performance in every sense, beginning with profit. Money is the most convenient way of measuring and comparing inputs of all resources and outputs. But this of course required that all resources were measured accurately enough to enable comparisons to be made of doing things one way or another.

The company's real improvement began once a new chief executive was appointed; he came from the management of one of the subsidiary divisions. He demonstrated to everyone that the methods that had been discussed in training sessions and had received only surface acceptance from the staff were now to be pursued and developed in hard practical ways. One cannot hide the fact that many old fashioned

managers resented the new methods; they lost their independence since they could no longer hide anything. However, they soon realised the benefits of achieving genuine profitability since the holding company supported their justifiable ideas for developing their business by investment and professional assistance where that proved to be useful.

The perception of the Company in the City as well as in the commercial scene rapidly improved through their appreciation of the dynamism and vision of this outstanding businessman. As a result the Government-inspired Industrial Reconstruction Corporation invited him to open discussions to absorb a much bigger company in the same field, the Leyland and Birmingham Rubber and Engineering Company. This company was not doing too well and its chairman, an honest, capable man steeped in the industry, was of retirement age. His first discussion with the new head of BTR ended with him expressing his complete satisfaction in the suggested take-over; he saw that the company he had built up would be in good hands.

This merger provided the opportunity to create a strong sub-contracting business offering a wide range of industrial products. It also gave BTR a strong presence in Southern Africa. Given the necessary energy to create change within the firm it would be strong enough commercially to deal on good terms with the big firms that formed its market. The kind of work needed to attain the continuous improvement of profit through excellence is described, for example, in my book already referred to.

The next year saw the new company returning a loss for the first and only time in its history both previously and since. From then on the disciplines of its management produced the gains.

The key to success is of course external in its relations to markets which internal disciplines can only support rather than create. It retained its simple tree-like management structure which became more appropriate as the company grew. It has always retained a simplicity of style, a very small headquarters staff, a minimum of paper systems, reporting in person, consultation at every level of management and an involvement of every employee in results. Its directors have never figured amongst the flamboyant, obviously rich businessmen; there is a minimum of privileges and a becoming modesty.

The Company extended its commerce through identifying its opportunities. These can be expressed very simply.

- BTR searches for firms operating in market areas that it understands well and which BTR considers after analysis could return better results by better management of BTR's type.

- BTR examines markets in territories that seem to it to be under-developed and where its presence could provide services that will profit the region and provide adequate profits to a BTR presence there.

Good business analysis and planning follows the initial imaginative step to search for opportunities in new territories. This enabled BTR to establish itself in Australia, North and South America, Western Europe and in some Pacific Rim countries.

- Needless to say, it promotes its management style and culture in these territories adapting to circumstances and employing and promoting local people. Each of its operating firms remains small, employing a few hundred people, rarely exceeding a thousand. There are no dinosaurs in operating companies, only a very small staff in divisional, regional centres and headquarters. BTR has only 14 directors who come from various operating companies across the world and whose education ranges from chemistry to accountancy.

- It has concentrated so far on incremental product and process development and modest innovations. Its internal technical centre supports these but BTR has no long range research and development centres. It does not sponsor science in universities but relies on its staff to apply available science and technology, regardless of origin, to the benefit of the company. It will acquire new technology through licences and other normal methods. As it develops into systems engineering this policy may well be modified.

In twenty years its growth was been phenomenal. In 1966 its turnover from its subsidiary companies was £15 million. £4 million of that was represented by sales of conveyor belting to a single customer, the National Coal Board. The Export Executive had in a few years generated a turnover of £4 million a year, having started from a mere half million pounds a year. So one can see that the rest of the sales from those factories were less than half the total turnover. By 1996 it grew to earning a profit of $1500 million from about £10,000 million turnover in 1500 subsidiaries worldwide. 90% of these are in OECD countries. It employs 125,000 people in total. From 1986-96 its average return on capital employed has been 30%. This is exceptionally high in engineering and especially in its sector of supplying mainly to the powerful prime contractors. On average every employee contributed per annum £78,000 of sales, nearly four times the total cost of employment, and a profit of £12,700.

At the present time it is developing more into the design and provision of systems to prime manufacturers and users to add to its old traditional fields of supplying only components. This is because it seems that the cycle of adequate profits and growth in components is beginning to turn down; the future does lie in more complex systems.

The BTR example is presented here because it is well known to me as a former main board director. There are other companies in Britain and elsewhere which are successful and use similar management methods and strategies. These methods of course have been applied in countries with stable social relationships which operate within reasonably stable and predictable systems of law, financial, taxation and other aspects which are essential to business planning and success.

Summary Of Actions For Successful Development Of A Company Threatened By Change

- Shed all illusions, make realistic assessment of its actual and potential position in the market place.

- Close activities that have no future, redeploy, if necessary by sale to others, assets that cannot yield a profit to the firm by methods that are cost effective and over a sensible timescale.

- Identify profitable opportunities to serve niche markets, learn what governs those markets.

- Determine whether the firm has or can develop the necessary commercial understanding to exploit the market opportunities identified. If not, either abandon the project or seek to attract or acquire partners who have that skill and understanding.

- Create a simple management structure which will inculcate a proper culture within the retained activities. Organise them into small enough operating units to enable people of just above average ability to direct them successfully with advice, assistance and guidance from a supervisory board.

- Identify and develop a professional operating culture appropriate to each business, both internal to the plant and outside it. Part of that culture requires friendly assistance to suppliers in order that they can satisfy your requirements. Your firm depends on them and upon the surrounding businesses and organisations. Be a good neighbour.

- Install a financial strategy, culture and operating plan for continuous profit planning and improvement. At the same time create within the total management structure a means of monitoring and aiding the fulfilment of the profit plan.

- This requires attention to every detail which will contribute to continuous reduction of costs, improvement of quality, reliability of product that contributes to the customers' perception of "value for money".

- By such means create a profitable company with prospects which are visible and demonstrable to potential partners and investors.

- Retain strategic flexibility at every level of management to enable people to seek, analyse and propose new ventures that are appropriate to the firm.

- Be ready to invest in training the people and motivating them to perform well and to be fit for further responsibilities.

- Do not hesitate to sell activities that are no longer appropriate to the overall business strategy or which show inadequate improvements over a long enough period.

- Develop good relations with local educational and training establishments, develop collaboration of the firm's staff with academics and local experts. Exploit their abilities to improve your products, processes, services and business as well as to provide your staff with up to date training in subjects that are important to your firm. In return create an awareness of business practice amongst academics and thus improve their understanding of your realities and to provide you with graduates from their schools.

- Be sure to develop close relationships with local communities; be a good member of them, contribute to their environment.

Let us see how much of this experience in reconstructing a manufacturing firm can be applied within countries emerging from a Command Economy.

The MIC Of The FSU - Its Strengths, Weaknesses & Problems

The MIC occupied a very much larger share, perhaps ten times more, of the national economy in the fSU than it ever did in peacetime in western countries. Estimates vary, but the fact is that it absorbed a very significant part of the GDP, and of the industrial labour force and "qualified workers, engineers and scientists". About 80% of all R&D was directed to military purposes in special institutes separate from the producing factories. It formed the backbone of Soviet industry and the educational system whose main role was to supply it with everything required to sustain the military strength of the country.

The military procurement system answered very well the requirements of Soviet military doctrine. In outline it worked thus:

The General Staff produced the doctrine, according to which the Warsaw Pact countries faced a potential threat from NATO. It follows that the response to the perceived threat was a development of the massive war of manoeuvre that the Red Army conducted to victory over the Wehrmacht in 1945. This requires massive forces, equipped with very large numbers of heavy battle equipment. Most of these were kept in reserve, with regular checks and their engines run for short periods. The active service regiments were fully equipped, their equipment, after expiry of life between service periods, was returned to factories where it was completely stripped down and returned to store. Recent doctrine demands much more sophisticated equipment, especially to fight an electronic war of communication systems and in space. Putting these two requirements together plainly places a huge burden on the national economy which is much greater than is the case with NATO countries which follow a much smaller requirement of materiel. Furthermore the fSU has a far less developed national economy and therefore cannot sustain the consequences of its own military and security doctrine. This, together with the inefficiency of the Command Economy in its wasteful use of all resources, natural, human and technological, caused the collapse of the Soviet economy. The continuation of the outlook, methods and culture of that system which still pervades the thinking and gut reaction of many people who are in responsible positions in the fSU largely resists the essential changes needed to improve the economy and to reconstruct the MIC to play an efficient part in the civilian economy and to provide for the defence of the country.

The essence of the system can be stated briefly as follows:

- The Defence R&D Institutes respond to the analysis of the General Staff which sets out its views of the future battlefield. The response of the military scientists is twofold. Firstly they imagine freely what systems and weaponry might give the armed forces an advantage and conduct the first phase analyses of those ideas. Secondly they provide the first steps for replacement of equipment that is becoming obsolete. If their work is approved, it is passed to specialist design centres, which are usually separate from both R&D and from factories. This is not the case in some key areas which include military aircraft, aerospace rocketry and equipment and in weaponry such as the Kalashnikov automatic rifle and infantry mortars. These are produced in integrated R&D, design and manufacturing combines, rather like their western counterparts. As a result

these weapons are extremely good. But there are some limitations in some cases caused by industrial deficiencies which show themselves in a restricted range of engineering materials whose properties are often inconsistent and in the manufacturing phase, which is not attuned to consistent, high quality output. These facts contribute to the relative high cost of production of finished goods even in the military sphere, but grossly so in civilian products from the same factories. These tend to use components of lower quality than those in the military; as a result their life, reliability, safety and performance suffer. This is especially true for electronically based consumer goods.

- The drawings of the design bureaux are sent to a wide range of factories all over the fSU. These factories were instructed by their ministries to produce in the required numbers and to required schedules and to deliver them at a stated price to the military and civilian users. Their work was closely supervised by military personnel, both operational and engineers, who spent long periods in the procurement system, usually after experiencing active service with the appropriate arm of service.

- These factories would be supplied, at least on paper, with all that they needed for production from other organisations who worked to the instructions of their ministries. For these reasons no factory in the fSU has developed a professional cadre of purchasing engineers who would be capable of deciding the best sources, supervising and seeking to improve their performance as suppliers in quality, delivery and price.

Needless to say, practice did not go as smoothly as the bureaucrats planned on paper. Consequently user factories were constantly short of essential elements to the detriment of good production management and cost control. The practice grew up in the fSU of employing "facilitators", whose job it was to visit suppliers and to cajole by one means or another the diversion to themselves of materials that were due to them but had gone elsewhere or were otherwise "in deficit", ie in short supply.

- The failures of the command system provide an additional reason for the main factories to widen their scope beyond their core job and skills to include many jobs which in a well conducted economy would be supplied effectively by specialist sub-contractors. Thus the factories grew. They sprawled as new shops were opened on the site, they embarked on things well outside their field; they made crates, rudimentary pallets and storage boxes for carrying goods between operations, cutting tools and jigs for production. Metal working factories bought moulding machines, usually of poor design from Eastern Germany, to make the plastic parts that they needed. Fine mechanics shops added foundries and blacksmiths' shops. Most of this work is rough and ready, of poor quality which works to the detriment of the main production. It uses inefficiently the equipment to make components in small numbers and so it is underemployed. Labour productivity of the secondary operations is even lower than that on main line work. Observation by western engineers in many factories turning out products for both military and civilian purposes leads to their estimate that, on the main production lines, labour productivity is between 10 and 20% of western norms.

- The Ministries dictated the price at which goods were to be sold, as well as the prices the factory should pay for incoming goods and services such as electricity and transport. The transfer prices of goods to military factories were often lower

than to civilian ones. Therefore, the factory managers never needed to control or to reduce costs. Most factories lack the means of measuring the use of materials, energy and service. The appropriate meters are sometimes not even available and only recently are discussions opening with western firms to supply them. Measurement in the required detail is essential to allow managers to determine where savings could be made and to take proper business decisions. The so called *Khozrashchet* (self financing) that was discussed at various times from Khrushchev's to Gorbachev's era is no substitute. It simply put another responsibility on the hapless director without giving him the means of exercising authority properly.

- The standard system of management is to organise it by function. The main, indeed perhaps only, job of the management was to fulfil the numbers made to the Plan set by its Ministries. Provided that was met, nothing else mattered much. Workers made things and inspectors rejected or passed them. There was and is no other system of assuring quality. As a result reject rates are very high. For example the first pass reject rate of TV sets in a military factory was conceded by its General Director in the summer of 1996 to be near 30%. Toshiba's equivalent in its British factory is 2%. Toshiba state that every 1% requiring rework costs them 5% of nett profit.

- The factories are far too large to be well managed even if the managers had a proper system to enable them to take managerial decisions leading to improvement. This is partly due to them taking on secondary activities which include the social services which are provided by employers rather than by municipal authorities. These are estimated to absorb between 15-20% of total costs and of course a lot of managerial time. Western firms rarely employ more than 1,000 people on one site, 500 would be considered better.

- In the fSU, all commercial work was undertaken by specialist import-export organisations based in Moscow. They developed an expertise in the commercial aspects of international negotiations which was theirs alone and not disseminated to other organisations engaged in education, research, design or manufacturing. However their selling policies were often designed to gain foreign currency even if the price negotiated led to actual losses internally.

Since the collapse of the USSR these central organisations have largely lost their functions and some leading organisations such as those in oil and gas industries and aerospace have been given authority to deal internationally. They lack experience and have much to learn if they are to hold their own and achieve contracts that are fair to themselves. This is especially valid when assessing the true costs and value of that which they offer, what the market prices are and what potential purchasers would be prepared to pay. The firms are also inexperienced in writing proper conditions of sale, purchase and tender.

These deficiencies are of course only too true for the vast majority of factories, whether military or civilian. They have never had to do any selling or marketing, not even to negotiate on even terms with their own purchasing authorities. Consequently when, as is the case today, they negotiate deals with westerners, they do not get a fair deal. They blame the exploiters of western capitalism, but they have themselves to blame for naivete, rushing into what appears to be an attractive contract only to find that they could have charged much more and still obtained the sale.

- Many of the defence organisations produced goods for civilian uses. Most of these, however, are seen by the population, in many cases correctly, as being less desirable than the foreign imports that are now freely entering the country. As a result the MIC has lost much of its civilian market as well as suffering a drastic reduction in military orders in a sudden and unplanned fashion.

In summary therefore the firms of the MIC of the fSU share the same faults as do their western counterpart main contractors but to an even worse degree.

- They lack all marketing, sales and commercial expertise.

- They have no means of identifying their costs properly.

- They are wasteful, high cost producers. Their civilian goods are usually worth less than the elements that go into them. This is one reason why the MIC sometimes sells its incoming materials instead of processing them. Another, of course, is that there is no demand for them or for military hardware.

- They lack the data and the system which will provide them with the ability to be confident that they are covering their direct and indirect costs, let alone making enough profit to pay taxes, customs dues, to replace old equipment and to develop the business.

- They lack the normal culture of competitive business within the factory, in purchasing, supply and in integrating R&D, design, development with manufacture and commercial studies to enable them to satisfy markets.

- They cannot really make a long term business plan to reorganise themselves, to carry out the steps that are normal in a market economy modernisation of every aspect of their work, training their people, closing loss making businesses, investing in medium term support for profitable ones and demonstrating that they have turned the corner from loss and inefficiency to profit and improvement.

- Their best chance of survival so far is to exploit their strength. This of course lies in the military sphere but there is no demand for most of their products. A useful exception is to be found in the aerospace rocketry. They can sell their reliable equipment to launch foreign satellites in competition with the French and Americans. They have also begun collaboration with American firms such as Lockheed to install Russian engines on American rockets. These Russian factories are probably the best in the MIC and compare well in every way with foreign firms. In this way they are following the same path as that of the main American and European contractors. But this will not save the rest of the MIC or the Russian economy.

- They remain prisoners of communist ideology, from which grow damaging and erroneous, economic, managerial and social "theories" created by people working in abstract without practical experience of competitive industrial activity. This explains the reluctance of many of the top leaders of the country, who have known nothing else but the ideology and methods of the Command Economy, to abandon their attachment to size for its own sake, talk of output instead of sales, centralised control and instructions given even to those few directors who want to move toward a profitable operation in what has become and will remain a market economy of sorts. As was seen in the account of the early days of

BTR, detailed supervision and instruction from the top stifle the initiative and motivation of younger and more junior managers to improve their performance and to take responsibility for their sphere of operation. Gorbachev saw this for himself and writes about it in his memoirs.[2]

Things are no better today. Attempts by western advisers to persuade factories to organise themselves along the lines set out above are often treated as policies aimed at destroying the strength of the fSU and of Mother Russia as a Great Power. This is perhaps understandable given the background of the leadership. To them, small is not beautiful, specialised activity is not efficient, devolution of authority along with responsibility is not good management practice - such things are UnRussian!

They fear devolving responsibility to managers of small firms that might become specialist suppliers locally to other factories and users. Once some of these are established in competition with each other and become profitable then they will become objects that attract both Russian and foreign investors. The main factories will integrate themselves with the necessary financial, commercial, technical R&D, design elements to enable them to progress and to generate their own future income for growth without subsidy. On the contrary they will support both local and federal state budgets. But these steps toward wealth creation are essential elements to allow Russia to build its economy. This would provide the vital means of restoring the health of the people, providing them with work, adequate income and a surplus to pay for reinvestment, essential defence and rebuild up the infrastructure which is falling to pieces. Other remarks hostile to these steps assert that the West wishes to dismantle the MIC to prevent it becoming competitive with the West. In answer to these remarks one might state that sales of weapons by the fSU would be assisted if they were to become better at marketing and at the culture of competitive manufacture. As it is the leading western firms collectively outsell Russia by a factor, an order of magnitude. The market for arms is in any case decreasing and cannot provide any country with enough income to rescue it from poverty. "Sell arms, save Russia" is as false a slogan as was that of the Black Hundreds: "Kill the Jews, save Russia".

Judging by the lack of real progress over the past 7-10 years in "perestroyka" and in "conversion" of the MIC it will take the Russians many decades to become competitive with the advanced industrial countries in manufactured, civilian goods and services. Many of the steps taken along the way have been devoid of commonsense. During perestroyka factories were instructed by their Ministries to design and make things that were totally inappropriate. Since the collapse of the USSR, various international bodies have, at their own expense, sent consultants into the factories; many of their suggestions have also ignored realities. These experiences quite reasonably disenchanted and engendered cynicism and allowed some of the wiser suggestions to be ignored. There is a better way forward if everyone is willing to learn from their own mistakes.

It is to the advantage of the west if Russia does produce things that others want to buy. It must be noted that the highest volumes of trade lie between countries that are the most advanced industrially and which have the largest GDP. Only countries, such as those in the Arabian Peninsula, which. happen to have almost unlimited sources of natural mineral wealth and at the same time a small population can afford not to produce manufactures. The fSU is not in that happy

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[2] Zhizn I Reformy.

position any more than are the advanced industrial countries in North America, Europe or the Far East.

These countries depend on competition and interchange of goods and services. They do not fear Russian industrial improvement. On the contrary, if Russia develops along those lines its per capita income will rise and provide a huge market for western products whether imported or made locally. In return it will not be enough for Russia to pay for these goods by selling raw materials. It has to manufacture a wide range of technical goods if only to employ its people but also because there is no reason why Russia should not contribute its share of good quality technical products for its own use.

Conditions Affecting Business Development In FSU, Especially In Russia

It has to be remembered that the rescue of an ailing western firm is difficult enough even when it takes place under conditions that are favourable to business. These include legal, financial and taxation systems that are not punitive and which can be relied upon not to change drastically in the foreseeable future. Changes should be fair, seen to be fair and introduced incrementally. In Russia none of these circumstances pertain.

The old soviet laws were of themselves none too favourable to regulate state enterprises; they simply do not apply to private enterprise. The actions of the post-soviet government do not encourage private enterprise to behave honestly and legally; they give the impression of inconsistency, of in-fighting between various ministries - which are proliferating by the month - and all of which claim some influence and control over an unfortunate enterprise or institute or programme. There is a lack of understanding of what is required from a legal structure by business. Government by decree is traditional in Russia and so is the need to modify or cancel decrees which are found to have consequences contrary to their intent. Sometimes these corrections follow, sometimes the corrections are improvements, often the cure is worse than the fault it tried to overcome.

The old, practically cashless, means of trading between State enterprises no longer exists. In spite of every attempt and endless advice from competent Western bankers, the system of clearing accounts between the Government and its own enterprises, between enterprises themselves, still does not work. There is endless trouble in getting paid which goes right throughout the chain of commercial events. Consequently many firms resort to the old methods of direct barter; even their employees are paid in kind and then have to sell, for example, lighters and electric razors in order to pay their rent and food bills. There is a lack of will in some powerful quarters to put the matter right. It pays a debtor, whether government, firm or bank to withhold payment and to earn high interest by depositing the money and then repaying it much later in devalued currency since the inflation rate by western standards is high.

The taxation system is at one and the same time punitive and therefore ineffective. There are lots of taxes that bear on commerce. Even something as basically simple as VAT is calculated in such a complicated way as to suggest that the British system could be followed by a five year old child. Were firms to pay all taxes as demanded they would rapidly go broke.

There is no agreed sensible basis for calculating values of assets such as land, buildings and for amortising equipment.

There are endless quarrels between the Federal authorities, the regions and municipalities concerning the division of receipts from taxes. Consequently many regions do not have the money to take over the social services that are a burden on employers; nor is there enough to pay for unemployment, retraining those out of work and for the payment of pensions which are also overdue, just as are the wages of State employees and those of commercial enterprises. These are justifiable reasons for the strikes of workers in many enterprises ranging from coal mining through transport.

At the same time customs dues are levied and removed from time to time on both Russian exports and imports. It is reported by the Finnish Ministry of Foreign Affairs that 30% of the total Russian Federal budget in 1995 was due to customs payments across the Russian-Finnish border alone. There are many temptations brought about by poor laws, poorly paid officials and the consequent poor enforcement of tax and customs dues. There are other temptations to corruption which have enriched a significant minority of "New Russians".

What Can Be Done By The Enterprises Themselves?

Much can be done by responsible general directors given authority over their business. They could follow the precepts set out above.

The most important job for the general director is to determine his future markets. In current Russian circumstances this is not an easy task. Russian Government enterprises and large commercial ones, even those in private hands, have a struggle to pay for services and suppliers need to be very careful before they accept assurances that the potential purchaser can confidently enter into a commitment in the long term. Were this not to be the case and if this situation were to change then one could contemplate a forward analysis on the following lines.

Study the import schedules that the Customs authorities should prepare regularly. Each factory will rapidly be able to determine what kind of product it could make with its existing equipment; it could then select the most appropriate from the list of imports and then look for regular imports of the same kind of product and find out what kind of organisation buys them. They will be in one or more of the following categories for example: extraction industries, transport, energy supply, information and business systems, industries making equipment for other industrial uses, manufacturing of consumer goods, chemical, or consumer goods themselves.

A market study should reveal why the purchaser finds imports more attractive than purchasing Russian products and what his future intentions are likely to be. Should the numbers and value look at first sight to be attractive then one should make an assessment of the detailed advantages of the imported product. They will be not only technical but also value for money, prestige, ease and safety in use, a history of reliability, good supply of spares, technical manuals, training of service personnel and a distribution network and so on.

The firm should resist the temptation to acquire a model, strip it and copy it in detail. This is what the USSR did for many years and the results are not good. Russia today is not Japan of the 1960s with its strong industrial base, design,

marketing technical and production capabilities. Japan then could afford to start with copying foreign models because it could improve them with its design inventiveness and could make them better through its superb production engineering and superior material which it could afford to import. Furthermore Japan had a closed market and could experiment with new products, observe their faults, improve them and sell them advantageously abroad. Russia is nowhere near that stage.

The best and most rapid route to competing with foreign imports is to do what the British have always done, namely to invite one of the best foreign firms to set up in their country. Sometimes the foreigner sets up in a brand new factory, but this is expensive and suffers political and economic risks; others collaborate through licensing an existing local firm. They may begin by letting contracts to their chosen potential local partner to make components for them. Their aim is not primarily to get machining done more cheaply but to test the abilities of the local firm to respond to western requirements of quality, price and delivery. If satisfactory, such work may lead to the local firm making, assembling and servicing the foreign product in the fSU. The goods may also be exported to neighbouring countries, using the sales network of the foreign partner. There are already many examples of this activity in firms throughout the fSU working with foreign firms, especially in telecommunications.

This is an obvious route for the Russian MIC factories and is also attractive to the foreign firms. The MIC gain products that are already selling or likely to sell in the fSU; at the same time the MIC learn the successful ways of their partner in business whilst he gains a foothold cheaply and with little risk in the fSU market and in its traditional export markets.

The home business is likely to be more secure if the potential customer for foreign equipment is a foreign firm working either alone or in partnership with a local organisation. Payment is more secure. Therefore one should be aware of those firms. They will be working in extraction, oil and gas processing and distribution, energy supply, air, road and air transport, service industries such as restaurants, gas stations, financial services and information technology and perhaps entertainment. They will be pleased to have key equipment made and serviced locally by a firm whose products they already are accustomed to use back home or internationally.

The purchases of expensive consumer goods are very visible in the large stores in cities. One needs to study their sales to determine whether the effort of entering that field by the above route is likely to be cost-effective. Is it worth, for example, making washing machines or other household goods in the near future or to allow imports to continue to take the market? One has to consider that the longer a brand has to consolidate its hold in the mind of the consuming public the more difficult will it become later on to dislodge it.

One might in such cases prepare a longer term strategy. This could be for a suitable firm to work closely with a local university or design bureau and jointly to learn the trade of designing such products for the market. Russian design for the military has been good but for everything else it has much to learn from the advanced industrial countries. This might be a suitable case for inviting foreign specialist design engineers to set up a product design centre, supervise its work in regular visits of short duration to enable the local designers to become independent. British experience suggests that this is not a rapid job; it may take about five years

for a design centre to grow within a mechanical or electrical engineering faculty. But the job will take for ever if it is not begun. There is a case for starting such a project as a model and then proliferating it throughout the major industrial centres.

Proceeding on such lines allows the MIC firm to create subsidiaries organised by product and by market area. These can be separated at first merely notionally without physical translocation. The process in British terminology is called "erecting Chinese walls" around the business activity; physically invisible but managerially separate and organisationally responsible totally for the success of that business. The advantage of doing this in collaboration with a foreign partner is that he will provide the managerial experience, train the locals on a day to day basis and on the job. This avoids the need to invite foreign consultants, who rarely have direct experience of doing a similar job but are only applying the principles and standard approach learned in business schools and which may be applicable and indeed successful in their own culture but take little note of Russian conditions.

If the financial success in the first endeavour is fed back into the company and not siphoned off by one means or another, the MIC firm can proceed to the next steps. It may be profitable to reorganise the production line for the joint venture, invest in more training for the key staff, supply means for better control of costs, work with specialists to create missing elements in the factory such as design, market intelligence, strengthen the distribution and after sales service, or advertising. It is advisable to follow the old military principle of reinforcing strength before spending time money and resources on another venture. Once one has begun to generate income reliably, the foreign partner will also wish to invest in further development and to encourage the local organisation to do so.

The generation of profit allows the firm to pay local and federal taxes; its developing success should be followed by serious talks with the local authorities to deal with social problems. These will include taking over the creche, medical care, some housing and other social service which are a burden to the firm, paying for counselling and retraining of redundant employees. For example many technical and production personnel will not be needed as production becomes more efficient, but there will be a shortage of people in marketing, sales, purchasing, quality assurance, service and design and advertising. Some should learn foreign languages, especially English which is increasingly becoming the common language of international commerce.

The directors should look carefully to see if it really is necessary to keep all the secondary operations that have grown up over the decades. A company making machine tools does not need to retain a plastics moulding shop for the few components using those materials. Nor does it need to operate a sheet metal shop for the casings, or an aluminium extrusion shop to make the sections for the instrument cases. These are expensive facilities which will be under-used and probably ill managed and maintained, to judge from many inspections in the MIC. The General Director would be well advised to turn such shops into separate small businesses, to find a suitable person to run each one on profitable, commercial lines and tell him to look for business in the region. That is what happened in a factory making ammunition for small arms in England when it was closed. The foreman welder was trained to run his workshop as a small business, the same happened to the press shop and moulding shops as well as to the maintenance electricians. They continued to serve the remaining activities on the site but also discovered other customers within the city. In Kaunas, Lithuania one or two such "spin offs" were also successful. One firm became so strong that it ran a virtual

monopoly; a second firm was established in competition after discussion with other factory directors and the city authorities.

In this way the monolithic factories of the MIC can be transformed into smaller, live businesses. Some of them will produce complete products, particularly with foreign partners. Others will act as sub-contractors providing specialist services to the primary industries and to others in the region. They will act in several ways, some providing components and yet others concentrating on particular processes and materials. They will evolve naturally rather than by central edict. Such developments form a natural base for legal, profitable privatisation, with owner managers having the incentives to develop their firm rather than to enrich themselves by short-term and sometimes dubious means. In this way the Russian Federation can slowly move to a greater degree of successful privatisation, with the state retaining a golden share to retain control of prime contractors, especially those in the defence sector, until they are in the hands of responsible people with the long term interests of the firm and the national economy at heart.

Another important step will be to close hopeless sections of the business. Mostly the buildings are poor and should be demolished. This will allow the remaining factory activities to be laid out more efficiently and will undoubtedly some free land. This should be studied and made attractive if only to instil a sense of pride in tidy working; sloppy surroundings lead to sloppy work. Some of the land may well find other uses especially if, as is so often the case in fSU, the works is in the middle of a city. Perhaps as in USA or UK it should be sold to a developer for a hotel, a restaurant, sports and leisure centre or for housing. The firm will need to engage competent agents to represent them to ensure that they do get a fair return. If such steps are repeated, the firm will acquire in a few years all the attributes that will turn it from a mere assembly and manufacturing shop into a fully rounded firm with all the attributes that make up a commercial organisation operating manufacturing processes to satisfy its commercial objectives.

The process of becoming partners with foreign firms that can bring well regarded, branded goods into the market of the fSU may have to begin by a modest step of acting as sub-contractors to those firms. Initially the local factory may have to demonstrate its abilities to assemble products to the required quality standards, to the contracted time and to the agreed price. This should then lead to manufacture initially of the simpler components and eventually to everything that is required. However the foreign firm may still have to supply western components and materials, either to ensure inter-changeability in the former case or to ensure materials of the required properties when Russian materials are not available to the right consistent standards. This kind of sub-contracting has been seen as a good first step to earn factories of the MIC an income from abroad, not only for its own sake but because it enables the local firm to learn the ways of successful firms in a world market. In return the overseas customer acquires confidence in local performance which it can improve by close collaboration. Such customers may become partners.

This stage may be followed by the local firm contributing technology and design ideas. Russian design engineers have not been able to produce well designed civilian goods because of the absence of the very close relationships in that field that they have enjoyed and worked in successfully to produce good designs for the military. The full potential of these designs has not always been realised on a commercial scale through defects at the stage of industrialisation. These deficiencies are likely to be overcome by close collaboration as described here.

Certainly the experience of the few western firms working in, for example, the oil and gas industry and in packaging have spoken well of the Russian products they use and of the personnel with who they work.

These firms and personnel need to acquire the culture that allows them to seek and get excellence from their own work and to get it from their suppliers. They should learn this from their foreign collaborators.

Key National Programmes To Improve Industrial Performance

One often hears complaints that the reconstruction of the MIC requires a closely worked out Plan from the top of the Russian Government. This breeds the suspicion that the factories will do nothing until such a Plan is produced. Russian history is full of "plans" and their lack of actual fulfilment but only in speeches. They remain "castles in the air". Far too many pronouncements of government officials, economists and factory directors demonstrate the continuation of dependence in the minds of senior executives on government and central action and financial support for the vital sectors of the economy. They should be thinking of earning a living by their own actions, creating with other financial and commercial structures the necessary means of financial, commercial and technical support to enable their customers to pay for their products. Until they do these things for themselves the economy will not improve.

This paper has surely demonstrated that the factories can do much to help themselves. There is, however, an undeniable role for government not only to create the ambience for successful business but in seeking to mend the basic deficiencies inherited from the Soviet past which the factories by themselves will find hard to achieve. These are simple to state.

A national programme is needed to identify and gradually improve the range and qualities of engineering materials to bring them up to the best world standards. This process in Britain took a decade or two.

A study must be made to determine the strategy for producing electronic chips. It would make sense for the Russian Federation to make a wide range but of competitive quality. Their poor quality, as well as that of PCBs and their underlying composite materials, prevents Russian electronic hardware from competing with the best elsewhere. They should probably decide, as has much of the rest of the world, to buy advanced, large memory chips as well.

The integration of total design into the industrial firms in the English sense, rather than that purely of aesthetics, into product planning and marketing is essential. This will necessitate changes in engineering education and in the organisation of design away from separate institutes into the commercial enterprises.

Another programme is need to train people in quality assurance. This goes well beyond the adherence to international standards such as the ISO 9000 series which provide merely the routines of a paper procedure. Following them in a bureaucratic manner can lead to failures as has been shown many times in the West.

The country is very short of people who really understand the processes of marketing, creating and evaluating business planning as well as measurement and

control of costs. The central institutes charged with commercialising the MIC should themselves become expert at these matters. They will then be able to act as internal consultants to the MIC.

Another area of importance is to improve the capability of the country to design, run, monitor and commission major inter-disciplinary projects in civilian fields. It does not seem right that Russia should continue to import "turnkey plants" and to employ foreign consulting firms to manage projects in railways, chemical plant, airports, hotels and so on. They have demonstrated an ability in the military field in spite of the handicaps of materials etc that they face in industry. It is surely credible that once the designers establish high standards for everything that goes into a product and project, the standards and high culture will permeate backward into every layer of supply. But this process in order to succeed requires the abandonment of much of the previous attitudes. These include a demand for speed, prestige gestures, and heroic dramatic gestures. Revolution has to give way to industrial Darwinism, slow steady evolution. The old order that permitted amateurs to give orders, to meddle and to hector and criticise, equipped merely with social and ideological credentials, will have to give way to professional managers properly educated, trained and motivated to run a business. Purely technical skills are not enough, as we have discovered in Britain. Engineers need to learn to run a business however technical it may be; technology has to be subservient to the needs of the market and of society. This change also requires changes in the education and experience of engineers at work. The steps taken to provide these changes are set out in the paper referred to above.

Disclaimer

The views expressed are those of the
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Notes On Selling To Western Firms

It is important to bear in mind these observations

No firm is waiting for new suppliers. Purchasers look for long term relationships with suppliers, they assiduously help suppliers to perform better. They help with quality assurance, advice on materials perhaps, cooperate in delivery arrangements, require suppliers to demonstrate how they will continue to supply if things go wrong. Firms are inundated daily with offers of further services. The bigger firms, who are the only sources of large orders for repeat business of particular components, have large buying teams with specialists buying particular commodities. Normally one has to make appointments well in advance to see a specialist buyer in a firm like Ford UK. A new salesman will need to be well introduced, recommendations from other satisfied customers help. The defence industries of Russia might be a sufficient novelty to gain an interview. However long experience both of soviet military and civilian equipment does not inspire confidence. Recent western experience of working in the fSU and eastern Europe, especially in the factories that have been opened to them, has diminished that confidence still further. Consequently the interview will have to be carefully handled. Claims of lower prices on their own are unlikely to be prove attractive. The buyer's job is to buy in the best market anywhere in the world and he does so with skill and experience. The best that can be hoped for is to ask for a trial order for something specific and suggest that they be treated as another source of supply. No newcomer can hope for more.

Very few Russian factories are organised to supply large quantities at competitive prices of elementary components such as ordinary mild steel nuts and bolts. In every advanced industrial country (AIC) such things are supplied by a very few firms who specialise in that trade. They are equipped with the latest automatic machinery, with very high productivity and therefore low unit cost of processing. Therefore labour costs are not significant, the cost of material predominates and the purchases are in such large volumes that the buyer can enforce a significant discount on offered prices. The culture of the factory is continuously seeking for cost reduction of every element and of improvement in performance such as delivery and cost. Furthermore they are required to deliver to customers that use large quantities on a daily basis if not even more frequently. Reliability of delivery and of consistent qualities in products are paramount. It is very rare for harmonious relations between supplier and customer to be broken by, for example, a rare disturbance to the trade. This is especially true of Japan and increasingly of the countries of the Pacific Rim which share the Confucian social and work ethic.

Consequently one should not place too many hopes on such large volume manufacturing orders. Large customers expect to be visited, they are very unlikely to make initial visits especially abroad to inspect potential new suppliers. They almost certainly have their local representatives in important territories where they may be selling as well as purchasing. Their attendance at fairs, exhibitions and conferences with the intention of buying is very unlikely.

Having set out the constraints facing Russian factories in securing large volume orders for simple components, we should now turn to the opportunities for specialist work which will be placed in relatively modest batches and therefore suit the organisation of the Russian defence factories in particular. These might

emanate from specialist firms making internal combustion or diesel engines for duties other than for automotive vehicles made in large numbers. Their annual output might be of the order of 100,000 units. Such firms typically place orders for castings, special bolts im mechanical products; electrical gear such as starter motors and control panels. Their requirements are for high quality products, with tight specifications as to materials, heat treatment, finish and accuracy and close adherence to specification as well as for production equipment and laboratory instrumentation. We have observed Russian general directors who take a casual look at foreign components and immediately assert that they can do that too. Such statements merely irritate and reduce confidence in the ability to understand what is involved. A very close study and understanding of the specification is needed before saying anything except "we will study this". Even apparently simple and straightforward items are more subtle than meet the eye and contain hidden pitfalls. It will be essential for the centre and its associates to equip themselves with national standards for materials, performance and safety standards for components and assemblies as well as of special requirements in specific areas of application such as hospitals and special laboratories. These are over and above the national standards which may provide merely a minimum standard.

Russian industry has to face frankly their difficulties in meeting quality targets consistently and economically. Apart from some specific materials those generally supplied to them are not only restricted in the range of available specifications but are also variable in properties. Processing is often insufficiently well controlled and workmanship even in traditional metal working is careless. As a result the required properties of the output itself are inconsistent and on test prove to be outside specification. Every single item was outside the dimensional tolerances specified. As a result the British firm lost interest in placing further enquiries within the fSU. In the past it might have been acceptable for many items to be rejected on inspection in order to provide the military with good quality products. The costs involved of rejection and of rectification are insupportable in a competitive economy.

The whole culture of manufacturing operations has to undergo a drastic improvement if the defence industries are to be competitive. The ideas of research workers in military technology have often been excellent but their implementation in practice has been handicapped by poor industrial performance. The culture of quality assurance (QA) and reliability must be encouraged. It must be stressed that the mere introduction of systems such as ISO 9000 is no guarantee of quality assurance; it merely provides a basis, an aide memoire if you like, from which people must work. Quality depends on the managerial and technical ability and imagination of people to ensure that every aspect is considered and carried out correctly. QA is a continuous process of operation, supervision and management with the participation of supplier and customer in every link of the chain from metal extraction, polymerisation to final installation and performance of the ultimate product in service. Reliance on paper systems however complex and however they may be computerised is no substitute. When a customer knows that he can rely on the quality of supplies he can reduce his costly goods inward inspection operations, relying on sampling methods.

Given the appropriate effort, this sector may provide the most immediate and profitable source of sub-contract and successive stages of collaboration and participation in foreign markets. In the beginning many foreign firms have found it necessary to provide their suppliers in fSU and eastern Europe with materials and components. This is not only to ensure quality but also to provide for

interchangeability of components especially in electronics. This is essential to provide immediate support for customers through distributors. No one is prepared to have his operation standing idle while spare parts are provided from an overseas source.

Delivery schedules are another key aspect of modern trade in components. Not only the major producers such as car manufacturers but also the smaller, specialist firms are taking advantage of the "Just in time" delivery system pioneered by Toyota in Japan. The advantages to the customer are considerable: smaller warehouses, simpler and smaller materials handling systems, less capital tied up in stocks of raw materials and components. The advantage therefore is to local suppliers and to those who can use reliable road, rail, sea and air transport for delivery. Suppliers who are far away have to overcome their handicaps by using reliable transport and local distributors. This adds to their costs. The calculation of ex-works costs has to include the comparison between large occasional deliveries and regular frequent ones to meet JIT advantages.

Another example is to be found in the distribution systems for electrical and electronic components and products. RS Components Ltd, a British firm, provides a service with thousands of articles in its catalogue which is widely distributed to its customers and which is kept up to date not only on paper but through CD-ROM. It specialises on supplying the needs of customers who require only small quantities of a given item but who need it immediately. A call to RS before 1600 hrs ensures delivery anywhere in UK by 0900 the following day. They have subsidiary companies in Western Europe, Hongkong and in USA, which are linked to the main computer in England. They also distribute through agents; the ones in Kazakhstan and in Yekaterinburg have done substantial business even in their first year of operation. Naturally the price per item is higher than that for bulk supplies. The profit of RS is considerable. They only accept items for inclusion in their catalogue which pass their own and national standards for performance and safety.

Whatever is the motivation actual or ascribed to some other countries it is simply not true that the purpose of certification in Great Britain is to prevent competition from imported goods by certification procedures. Certification laboratories deal only with the technical aspects of acceptability in the market place; it's the Consumer Association's (CA) laboratory which examines the other aspects which affect consumer's choice. It provides a comparison with other articles on the market and recommends with reasons the ranking of competitive products. Russian industry would be well advised to follow up the suggestion that I made in 1989 to establish such a laboratory in Russia. Initially the manufacturers might have to pay for the work rather than consumers as they do abroad. The CA Movement in advanced industrialised countries has provided much of the information which has allowed the general population to improve its level of judgement of its purchasing intentions and decisions. As a result the pressure to improve products and services from the public on manufacturers and suppliers has been considerable.

Costing & Pricing

The old Soviet laws that determine the freedom of a general director are largely still in operation. For example a state factory is obliged to cost a product on the basis of absorbing the full overheads of the organisation, even if it is largely idle. The GD is not allowed to price a product such that it will recover the variable costs and make a contribution to its own essential fixed costs and perhaps to the general overheads.

Such marginal costing and pricing is still an offence. This is not the case for privatised firms. Since the collapse of the USSR, the tax system has piled up a chaotic, set of taxes that if fully obeyed render an honest business impossible. Furthermore it is continually changing and as taxes are under-recovered perhaps because some firms are idle then the load on those still functioning is increased, rendering them even more unprofitable.

The standard soviet costing system is cumbersome, even fictional, and does not allow the true costs to be stated. Even private firms are subject to laws such as that which fines them if they pay wages more than six times the minimum wage. Consequently they show more workers than are needed and that they are paid less. In fact they claim that they will use fewer workers and pay them properly.

Amortisation of equipment, buildings and land is also unreal since the truth is a double-edged weapon. If it is set low, the profits are artificially high and will be taxed accordingly. If the figure reflects the replacement cost then the firm is taxed on the declared book value. And this in a state of high inflation. This is a subtle game that requires cunning to stay alive. Most factories have no idea of **inflation accounting**, they use old norms for use of services. Energy costs have been rising steeply but few firms know their costs, have little idea how to save energy. The labour productivity of most factories is appallingly low, probably within the range of one tenth to one fifth of our equivalent factories. The office bureaucracy is overstaffed and inefficient. The Ministries that they report to are also overstaffed; there are significantly more people in the State bureaucracy than there were in the USSR which had twice the present population of the Russian Federation. What with this load and that of the military which is still at least 12% of GDP, the Government at federal level is always short of money. Consequently it is always several months in arrears with its payments due to the military and to industry. Banks play the same game of withholding payment to creditors' account. They find it profitable to make money by earning interest at 200% a year and then paying it out late rather than serving commerce, industry and the rest. Consequently industry is starved of funds for all purposes. Factories plan on being paid in cash on delivery if they can.

The cost of borrowing is high. Taking into account all these facts, together with unrealistically low estimates of future costs and inflation it takes some effort, insight and imagination to discern anything like **true costs in a factory business plan**.

Cross border trade in high value components such as electronic, even in semi-finished footwear, is complex. Purchasers seek to take advantage not merely of low wage rates and advanced production systems and managements but also of specific tax incentives and Government grants for goods partly or wholly processed in their territories. For example a British firm currently orders partly finished footware from a Russian factory, ships them to USA for completion and thereby attracts a US Government grant for exported goods which end up in the West European market.

The Russian defence industry must realise that current commercial and technical conditions in the "Global Village" of design and manufacture are putting the countries of the Pacific Rim in advantageous competitive positions relative to the AICs and even more so to the fSU and eastern Europe. The Russian defence industries must consider the Pacific Rim countries as their main competitors for sub contract and subsequently developed business from the AICs, rather than the

AICs themselves. This extends to software, programming, design of electronics as well as to manufacture itself.[1]

The success of the defence factories in working with and exporting to the West depends on them learning rapidly the culture of doing everything thoroughly; science and research play little part in this process.

Some Advice On Selling Innovation

These fall into two categories: ideas for licensing and finished products for sale. To entice foreign investment one must make it easy for potential buyers to appreciate what is offered. Western firms are very busy, they have many offers to buy ideas and products and they require things to be simply, logically and informatively presented.

Let us take the first category, ideas for licensing. I have a lot of experience in commercialising innovations from academic institutions, by private inventors and from within industry. Based on this experience it is clear that the presentation of innovations should be improved in order to increase the interest and therefore the chances of getting contracts from foreign firms to exploit these ideas.

General Remarks Which Apply To Both Categories

A good rule is to get the documentation translated by a practitioner in the field of the offer who is a native speaker of the language of the country you are addressing. Make sure that the translator knows the correct technical terms. Organise the data around categories such as physics, chemistry, materials and then into sub divisions such as lasers, optics, anti corrosion treatments and materials, diagnostic chemicals. Look at western catalogues especially mail order and you will get the idea. Write the data from the point of view of the potential buyer and not from that of the originator.

I therefore would like to offer the attached list of questions which apply to category one, the offer of intellectual property and which is essential both between western organisations and from fSU and the west.

Here are the reasons for each section. Potential buyers must know that the offers come from people who have full rights to the intellectual property offered. It is well known everywhere that various bodies collaborate, However if they do so as sub contractors normally the right to the property stays with the institute that commissions sub contracted work. However it is essential that the sub contractor realises this and does not later demand a share or hinder the negotiations between the main offering party and potential licensees.

It is essential that this section is completed but it need not be done at the first phase. For the potential buyer it is absolutely essential that the second section is completed in advance so that he can assess its worth. One has to remember that each product offered probably has many equivalents or almost equivalent competing products. It helps the assessor to know what they are from the outset. If you were

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[1] See "Innovation in East Asia, the challenge to Japan" by Michael Hobday, University of Sussex, UK, pub Edward Elgar, 1995, ISBN 1 85898 017 8. Of especial importance to Russian readers is Chapter 3, "the latecomer firm".

to rely only on the most likely user of each item who receives your document then he may look at it and find what interests him. However it is common here for an intermediary organisation to act as a broker of technology transfer and therefore he needs as much information as possible to decide if the idea has competitive merit and if so to which firm. The first step is for the inventor in Russia to do the basic work himself. It would be totally uneconomical for anyone else to do it. The legal section is set out on the assumption that the western collaborator is either such an intermediary or a directly interested party.

SECTION 1 - LEGAL

This can be delayed until a possible interested party is found in the west.

Authors Of The Innovation, Name(s) And Place Of Work.

Has Any Other Person Or Institute Contributed To The Work? If So Who?
Please obtain a signature from them either acknowledging their share of the work and agreeing to the terms of collaboration or acknowledging that their work was not innovative and that they accept that they have no rights of authorship. You are asked to certify that clear title exists for the authors here named. You will be responsible for actions against you in your own country. Should it be decided to fund foreign patents, it will be the job of the licensee to police those patents at his expense. You will be asked to sign an exclusive agreement with an interested western party, probably for a period of 6 months. This will enable them to study the prospects for commercialising the idea at their own expense and to come to a conclusion whether to proceed or not. The agreement would be forwarded later on.

Have You Applied For Patents? In Which Countries?
If so please be ready to show the applications. The western side guarantees not to use or disclose your information to any third party unless it can prove to you that it has had the same data from other sources before your approach. A standard confidentiality agreement will be attached for your information. You are welcome to show it to your legal adviser.

SECTION 2

To be completed as soon as possible, fill in as much as you can.

Short description of the innovation

What is it? Aims of the innovation
What does it achieve or what is it aimed at achieving? Explain the advantages of achieving your stated aim. Why is this a worthwhile aim? Think what other aims might serve the ultimate objective of a user of the idea.
How does it differ from other ways of achieving one or more of the aims? Describe how people have managed to achieve in whole or in part the aims of your innovation before it appeared. Cite all forms known to you of potential competition to the innovation, giving references.
What are the advantages claimed for the innovation over prior art?
Has it any disadvantages?
If so is it possible with future work to reduce their effect?
Compare the innovation with the prior art? Setting out all forms of comparison, eg economy, speed of realisation of given aims, better accuracy etc.
What are the main areas of application that are envisaged for the innovation? The more generic the idea the wider its application is likely to be.
At what stage is the innovation?
What aspects have been checked so far?

Technical and Production

Laboratory experiment, *bread* board or technical prototype.
Methods of getting it into production.
Any special features of further experiment and technical development? ie any scarce materials, components required, any safety hazards, special processing equipment needed etc. Give results as concisely but as fully as possible.

Commercial

What kind of market is there?
How big is it in your opinion?
Have you talked to any potential users?
With what result? Record what data is available.
What is the possible range of price that users may be prepared to pay in your country and in an advanced industrial country? Try to compare like with like, ie ex-factory price if possible. Cite catalogue prices quoted in advertisements of competitors if nothing better is available. Cite costs of doing the job by existing ways with which you intend to compete. Give your sources.
What commercial contacts have you had so far?
What have been the reactions of the people whom you approached?

Financial

List the elements and quantities that make up the innovation, if you can and estimate their current costs to you. This includes materials, labour, use of equipment,
If you can, list the steps and what is needed to complete the development phases from now through production till commercialisation.

Section 3 - Explanation Of Modus Operandi

Next phase of collaboration

The West will study your statement, make a rapid assessment of its claims for novelty and potential application. It may be essential to discuss preliminary findings with you and to ask some questions. It will be in your interests for these to be answered as fully, frankly and promptly as possible.

If this first phase is satisfactory, the idea, under seal of confidentiality, can go to expert referees knowledgeable in the field and also in those of potential use. Their report will guide the next phase. Our experience in commercialising innovations is that we can identify potential buyers quickly. However the more important and potentially valuable the idea the more likely it is that we shall be approaching large powerful companies. You will understand that these firms have their own procedures for evaluating ideas and that this takes time before they would even decide to visit you for direct discussions. However six months should be enough time to take discussions with one or even two such firms sequentially.

We may have to suggest an extension to the period of the exclusivity agreement should the idea be declined by several firms and if we think it is worth approaching others. However, the more an idea is taken round the market the lower its potential becomes.

Basis of share of income in case of success. You should normally aim at payment of a lump sum, perhaps as an advance on royalties plus a continuing annual royalty for an agreed period.

Disclaimer

The views expressed are those of the
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UK Ministry of Defence

Rehabilitation Of A Russian Military Factory

A sample case study from 1993. This programme can also act as a scenario for a business exercise for a group of Russian students from enterprises, working as the newly appointed board of directors, taking over the factory from the receiver or under State orders. In the latter case they have to be prompted to arrive at the answers set out below for action by the western and local task force in real time and circumstances.

Tasks

1. On the basis of the appreciation set out below, to bring in sufficient income as rapidly as possible to ensure the independence of the enterprise on a normal profit making basis as understood in a free market economy in a short as possible time scale.

2. To provide the factory management with sufficient experience and understanding to be able to continue the process without the continual presence of trainers from the west.

Appreciation Of The Situation

The enterprise consists of a series of manufacturing plants and a design institute located on two sites about 5 kms apart in a large city of about 2 minion people in a republic of the FSU. The buildings are mostly three storey, old and in poor condition scattered over the area. The spaces between are littered with broken equipment, raw materials, scrap and other items. The production equipment is variable in quality and age. The machine tools are mostly old, standard soviet-made, in reasonable condition, still capable of delivering accurate work; however the cutting tools are primitive, poor quality and of a design that has not been seen in the west since the 1930s. The heat treatment shop is pre-WW1 in design and has been neglected. Layout of the factory is appalling; materials and work in progress are stacked anywhere, in corridors, alongside workers and often in old ammunition boxes or wooden crates from the fruit market. All are manhandled.

The optical grinding shop for lenses turns out good optics, uses imported Pilkington glass; it is a clean shop, sensibly laid out. Optics are to military quality; the same are mounted in cheap civilian cameras.

Manufacture of electronic chips and PCBs is located in a poor shop; the clean room is a joke, there is no personal discipline and the room has high ceilings with no air filters or air lock doors. It is equipped with some new but mostly twenty year old equipment for manufacture and checking, but it is adequate. All equipment is imported. Reject rates are high. Output is very slow - productivity is about 1/5th - 1/8th of UK rates - using primitive makeshift tables and conveyor line with women hand working each component operation after operation along the line. Production is inspected and much is rejected at the end of the line. There are some Hungarian machining centres which are fitted with Japanese robotics and NC and CNC controls are visible, unused and with broken feed elements. Some Societe Genevoise jig borers are still in crates in the open yard with delivery dates 3 years old on them.

The metal press shop is in poor condition and the safety system is inadequate. The production control system is by job cards located in shoe boxes. The buildings are

heated from district central heating; there is no way of measuring or adjusting the load between shops and buildings; it is either on or off; reduction in temperature is obtained by opening a window.

The cost system is primitive, it records only direct labour and materials as variable costs. All else is recorded as fixed overhead at 1000% of direct labour. Taxes are itemised separately and 25% "profit", the legal maximum allowed, is added at the end to give the sales price ex-works. No inter-shop costing or analysis is possible.

20,000 people work in the manufacturing areas and 4,000 in the institute.

Most of the labour force is effectively idle but is paid to stay at work by state credits. Sometimes workers are sent home on extended leave, both paid and unpaid. The management keeps them on for many reasons: the firm is the only source of support for the workers, handing out food, some supplied from their own farms, at subsidised prices in the canteen, treating them in their own clinics, sending them on holiday in their own rest houses. There is no attempt at retraining for other jobs or careers.

The directors say that they expect new orders from civilian ministries within three months and that it would be uneconomical to sack the workers and recall them. There might also be protest marches leading to public disorder. The firm made optical and electronic equipment for the military as well as cheap cameras for civilian use. Some of their output is laboratory instrumentation and some of it is designed for civilian and some for military applications. The military orders have dried up.

A complete list of product groups is as follows:

Binoculars, stabilised and waterproof, for tank and helicopter crews.
Night, infra red.
Image enhanced telescopes, both for snipers and surveillance.
Large telescopes and periscopes for submarines and tanks.
Video cameras can be attached but not made in house; usually Japanese.
Laser sights and head up vision for pilots, gun directing versions also available.

The firm has designed and begun to make and sell simple consumer goods such as kitchen utensils and food mixers as well as starting a line of medical equipment based on laser technology with the advice of a Professor in the local Polytechnical University who specialises in this technology.

All the above are assembled by hand by "knife and fork" methods; no production or assembly line.

95% of all sales and supplies come from within the CIS, mostly from the Russian Federation. Commerce is difficult since there is no normal system of bank transfer; money owed is held up for up to six months. Much is done by barter. Normal communications are also difficult with road, train and air movements handicapped by fuel shortages, breakdowns and organised theft.

Design of basic military products is carried out not in the firm's design institute, but in primary Institutes, usually in Moscow, reporting directly to the various Defence Ministries. The firm's institute is responsible for turning the engineering drawings and documentation sent from Moscow into manufacturing instructions;

they have no experience of design for the market and no experience of working interactively with customers; nor have the primary institutes.

In summary: as to physical state, there is some new equipment but a lot is about twenty to fifty years out of date; buildings like Britain 1900, management style Britain 1939. The firm is financially bankrupt, lacking in all elements of management appropriate to a western marketing firm based on manufacturing and design of own products. These elements are set out below as actions for training and tutoring by the western group within the firm.

Ministers insist that the technology is high class and do not understand why western investors are reluctant to enter into partnership since the factories have very cheap, highly qualified labour and engineers with very high theoretical qualifications, and because the fSU market is huge and unsupplied.

The firm has no understanding of commerce or of marketing; it thinks that it is alone in CIS in developing its new products; which is not the case. It has no idea how to negotiate and is a prey to carpetbaggers from the west on the look out to exploit them.

Preliminary Steps

1. Plainly one has to gain time to allow a proper plan to be formulated and put to directors and Government Ministers. Therefore the above appreciation has to be put squarely alongside an outline plan based on experience, with the aim of continuing State credits for the time being. The full plan will provide an estimate of time and money required to bring the firm to profitability, when it can dispense with subsidies and rely on bank loans or commercial investments based on proper business plans.

Six months at present rate of subsidy would seem about right.

2. In parallel the study will propose the following plan of action and present it to the Government. The role of tutors is to prompt the, ie the Board of Directors or students to come to these conclusions for themselves.

System For Conversion Of Soviet Military Factories

Step One

Select strong product areas for development, identify weak ones; with General Director (GD), select future business manager(s) (BM), each to concentrate on one product family by its market sector. Work with them to identify priority tasks and GD's role as leader of business team.

Set up permanent business team under BM comprising:

> product design engineer, sales and marketing, production engineer, cost executive, quality engineer and buyer. NB Some functions may have to be combined at outset.

Tutor each member in:

working in simultaneous engineering team
his roles
and learning from each other.

Step Two
Tutor participants in team work and in their roles. This follows practice with which they will be familiar from training in Soviet Army Staff Colleges. But it is on the spot and for real rather than map exercises.

Our experience shows that they need detailed tutoring in the following areas of company activity:

Strategic planning, marketing and presentation of business plans
Commercial, sales, management of the distribution chain
The process of design of products
Factory management
Evolution of manufacturing processes
Management of the supply chain, purchasing, quality assurance.

Selection of Targets
Plainly the first job is to assess how to get income quickly into the firm from sales. Therefore assess the prospects for selling some of the product lines abroad for hard currency since this is more stable and more valuable than rubles. Therefore take relatively high value products which are well established and identify their opportunities and follow them up rapidly with western distributors. Take all necessary actions to up-grade them to be competitive abroad. This will require design and purchase of foreign components. Establishment of product support is essential. Confidence in supply will determine future sales. Concentrate on upgrading quality in all aspects expected in the west and reliability and continuity of supply. Cost reduction is not the primary problem since competitive prices in hard currency seem, at first inspection, to be attainable.

However, in parallel establish a system for measuring all inputs to production and overhead costs and establish a normal accounting system. This can be taken without undue haste and cutting corners.

Get a quick success with at least one product group, establish self confidence in business teams and managers. Follow up with exercise in widening product range in most successful or promising areas.

Look at reducing costs by closing loss making areas and savings in all wasteful areas such as utilities.

Develop detailed business plan costed and with timed targets. Present these to the Board, Government and Local Authority.

Plan to rehouse best product lines on cost effective lines.

In more detail, in selected product areas for development:

Commercial
Identify attributes of western competition
Prepare specification comparison with western models
Show how to identify distribution route to hard currency areas Improve design and build quality as necessary
Calculate or estimate true cost and profitable price bracket
Compare with probable price importer/distributor pays for his catalogue items

Develop offer attractive to distributor and final user
Approach one by one selected distributors. If "No" select next one. Negotiate terms for trial orders
Invite distributor to your firm
Put in place full product & market support actions
Send technicians and provide training in territory as necessary
Visit territory, learn about market from distributor/representative's viewpoint
Begin to sell, take feedback of experience, take required actions back home
Develop the business based on above develop products for internal markets.

This basically covers work of sales and of marketing executives.

Design
Tutor product design engineer in working in simultaneous engineering team and his role, eg:

Identifying market needs, wants and criticisms, relative to competition Role of range of functions, ergonomics, aesthetics, ease of maintenance, safety in use, reliability, interaction with quality of components and materials. NB may lead to import of those from west.
Design for ease, repeatability and costs of production and assembly and test in own works.
Reducing lead time from inception to acceptance of product from the line. NB a shared objective of the team.

Manufacture
Tutor production engineer and plant manager in working in simultaneous engineering team and his/their roles, eg:

Setting ideal goals as well as achievable goals.
Ultimate responsibility for profitability of the plant, presenting investment proposals
Continuous improvement of effective use of all resources, including human, materials, utilities, space
Move away from current work and job cards to total production planning, How to measure each cost element
How to provide budget, actual and minimum theoretical figures How to select and work through each opportunity for resource management and cost reduction
The prime importance of reduction of waste and rejects in current environment
Leadership of people
Recommendations for training and development of personnel
Planning for operation, maintenance and continuous evolution of product and process, planned and preventative maintenance, conditioned monitoring, better tooling, tool maintenance and better test methods & equipment
Audit of safety, risk and hazard analysis and reduction, ecological and environmental impact
Definition of lost time and other accidents, records, comparison with others, concern for reduction
Working with trade unions, outside bodies
Quality circles, suggestion schemes and rewards.

Cost Executive
Tutoring in working in simultaneous engineering team and his role, eg:

Reporting to the general director and to business management team
Construction and use of regular management accounting systems
Methods of measuring costs
Estimating and presentation of quotations to sales and marketing and costs
to business manager and the team
How to present and explain management accounts
General financial advice.

Quality Manager
Tutoring in working in simultaneous engineering team and his role eg:

Reporting to the general director and to business manager NOT to production staff
Responsibility for quality systems, their implementation within the firm
Managing the quality of the supply chain
Certification systems for equipment and personnel and for the organisation
Move away from make-inspect-reject to TQA.

Purchasing Manager
Complete education in practices and responsibilities of purchasing dept as a contribution to survival and profitability of the firm, including (the following are especially important in current post-soviet environment):

Contracts, negotiation, quality, delivery, TQA, performance indicators
System of discounts especially for quantity
Bonuses for performance
Mutual interest in continued long term profitable relationships
Value of competitive tendering and supply
Evaluation of tenders
Value for money, not necessarily the cheapest offer
Splitting orders
Helping supplier with his problems, to assure continuous improvement in cost reduction and reliability
When to buy from abroad
How to do all above with foreign suppliers
Free issue of scarce materials and components
Storage and distribution systems and their security
Insurance issues.

Establish normal western management meetings to monitor results and plan the future.

Step Three
(can be done in parallel for weak areas)

Establish working group under a deputy to general director.

Evaluate which activities should be closed or moved out of the factory.

Plan for run down.

Decide future of work force, offer individual retraining and establish placement in cooperation with regional development agency - which may have to be set up.

Dispose of assets. Decide new uses for space; re-lay out factory, take advantage of chance to improve flow of work.

Evaluate which activities should be relocated outside the, eg non-core activities. Discuss with local authority prospect for setting up small, competitive businesses based on these and parallel ones from other local factories. Could sell, eg management buyout.

Provide training in running small business to staff and workers.

Plan to dispose of factory's social services to local authority or private enterprise such as cooperatives.

Local development agency to monitor results.

Step Four

By then the factory will be in a better position to assess its opportunities in markets within its own republic, within CIS and in Central and East European countries as well as in third world. It must develop these markets to satisfy own population's needs; its work force will be earning money as will those released from the firm who have set up successfully in businesses. It should have shed its illusions and begun to work normally. It should be able to do market intelligence work to assess needs and roles of competitors.

And so on. Motu perpetuo, allowing evolution of the firm, its products, processes and profitability. If appropriate seek western partners along normal lines of commercial relations, not necessarily investing in equity. This experience will help the Russians to evolve factories and processes instead of letting them deteriorate, as now.

Some **possible avenues of cooperation with western partners**; these may form part of the tutoring process or result from improved business capability thus becoming more attractive partners.

1. Assembly of western designed products using both local and imported materials where necessary. Imported QA methods essential.

2. Develop above into offshore purchase by western firms of complete components and products, eg telephone systems in Baku and aircraft doors by Boeing in Poland.

3. Buy advanced components and systems, primarily in military products.

4. Agreements to use foreign know how to make much needed goods firstly for internal market and later perhaps for export; could hire experienced designers from abroad instead of trying to design from the beginning high quality, civilian goods of which locals have no, eg packing machinery for macaroni, consumer goods.

Also essential: set up project engineering teams to design, make, commission complete manufacturing systems for things like batteries instead of buying them with hard currency. Will need licences.

5. Collaboration in aerospace, especially in regional aircraft, using Russian airframes, wings, but US/UK prime movers and avionics.

6. Exchange and sale of intellectual property, software and specific inventions, eg computational fluid dynamics with Imperial College and MEl. A collaborative organisation needs to be set up to examine, sift and promote good intellectual ideas from fSU.

7. Contract design and R&D, eg Boeing & IBM.

8. Encourage foreign entrepreneurs to set up green field operations, buying surplus equipment and hiring locals, eg Lithuania in medical products bringing own advanced products and knowledge of western markets to which they are selling.

9. Twinning a la Canadienne. This allows both sides to benefit; Canadian firms use Russian firms to make simple things more cheaply than they can themselves. And Russians learn from Canadians how to manage such a firm.

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Additional Case Studies [1997]

CASE ONE

A weapons electronics factory which wanted to export its oscilloscope

Presentation By The Factory Directors

This oscilloscope was robust, it was designed to work even if it was dropped by parachute or if it fell from a vehicle in the battlefield. Its specification was no worse than that of Hewlett Packard's products as advertised in magazines. It could be sold for $400 versus HP's product at $800. Therefore there was obviously a good export prospect. Why did westerners not come to buy it?

My Evaluation of the Proposition

1. What was the basis for the price comparison? Answer - offered retail price in western scientific instrument magazines - compared with ex-works price in FSU.

What is wrong with this comparison? The factory had no idea. Correct answer: in two parts - at best the comparison is with the retail price as paid by a western customer, say a university laboratory, whereas the factory's price was based on its - poorly calculated - costs at the factory gate. To that one had to add - freight, insurance, import duty; costs of supporting a distributor in the foreign country including training his mechanics, supply of spares and a manual in correct local language. Plus initial costs to the distributor of getting the national authorities and industry sector authority (for example, British hospitals have additional standard requirements to the basic national and international standards). Had they made those enquiries and added these costs? Answer - no.

2. Did the factory know how to find a good distributor? Answer - no but they thought they would make a trip to their export country of choice and choose one.

Evaluation of this approach - this is the most expensive route and the one least likely to produce a good result. To go to the country without prior desk work is expensive. How should one go about the job? Two answers - one general, the second particular to this case, which is easier.

General Study the trade directories, they are available in local embassies - a firm seriously intent on export should buy Its own copies, for example, of Kompass Register available for affordable money on CD-rom. Look up distributors of the family of products including your own. Find out whose products they represent now, pick a few firms which are neither too big - those will not be interested to add your product as an Isolated line of equipment - or too small - those could not afford to invest the time and effort to add your product. Write to a few chosen firms, introduce yourselves and your range of products, add that you would like to start with one, the oscilloscope, and the prices that you could deliver It to them, ask if they are Interested to represent you and if so would they like an example to study?

If so send them a well prepared, tested and packed sample. Then go over to talk to those who confirm their Interest, listen to their Ideas of the market, discuss how you would support them. Discuss the mark up on your prices they would need, normally this would be around 20% of your price to them. They have to provide Immediate service and this costs money. For example, suppose a British university research laboratory has such an oscilloscope, if a fault appears in it, one can fax the firm before 5pm and the spare will appear at 9.00 next morning by courier or post. The distributor has to hold a stock of spares, It costs either him or you the manufacturer, depending on your agreement, money to hold, store, identify and deliver the stock to customers. In the last resort he will send his technician. Naturally the customer pays for the service but the distributor bears the costs of the technician In the first place. These may not be fully paid by the customer; it represents an essential on-cost. No customer will allow his laboratory to be idle while a spare is flown from the factory. He is willing to pay much more for Hewlett-Packard's instrument and service which he knows he can rely on.

Check their credit rating and standing in the industry, ask to talk to some of their existing customers. Ask yourself if you think you can work together, choose not only on the objective facts but on their personalities and keenness to work with you, invite them to visit the factory.

The factory personnel resisted this explanation of how to work in a market economy; it was much too complicated, outside their experience. They took a lot of convincing. It was easier to ship it and forget it as they had been accustomed to in the USSR.

Their particular case All such instruments are mere commodities in the west. Most customers will buy a simple oscilloscope through a catalogue from, for example, a specialist wholesale firm which sells everything from wire, through wire strippers, chips, pcbs to quite large, standard instruments. There might be a range of 10 oscilloscopes from competing sources. The easiest way to sell such products is to get them accepted in such a catalogue; in the UK there are two firms in this field.

Each will want to know where your instrument fits into the range, both of price and performance and how many he might sell over the next few years; he will need to know the costs he would incur and whether the mark-up (or discount) that lies between the cost to him and his selling price is sufficient to earn him a profit at least as high as that of the equipment already on his range. If not, there is no advantage to him of stocking your product. If preliminary talks suggest it is worth taking further steps he will submit your instrument to all the inspections and tests needed to sell it. This will cost him time and money even for work done in his own laboratory or in another one accredited by the national authority.

In this case, because I had good relations with one of the two wholesalers in Britain, they agreed to carry out this work and to report free of charge. Their report showed the wide gap between an instrument that served its purpose in the FSU and one that would command a sale in an advanced industrial country. Briefly the report showed:

- Some of the electronic components were not good enough to meet European and British standards, it would be necessary to identify the western equivalents by code and for the distributor to use those, sometimes immediately as substitutes, in other cases as replacements after breakdown. The factory did not know the equivalents.

- The wiring was not in the colours of the national standards. These may differ in spite of euro-standards, furthermore some standards such as for nuclear power and national hospitals require their own colours.

- The insulation system was rejected by the safety standards and would never pass the hospital requirements. Redesign was essential.

- The general design and construction was by western standards several models out of date; it corresponded to what was being sold in the 1960s in UK. Consequently it would not command a good price.

The British wholesaler was in principle interested in developing relations with FSU electronics factories but this somewhat disenchanted him; better products would have to be offered next time.

The initial response from the factory and the Ministry of Industry was disbelief, suspicion of western motives. The basic attitude was that their product must sell because it was made to Soviet military standards; therefore the west was deliberately finding fault. The attitude of the Japanese in the early post-war years was humble and realistic, they learned and now are often the world leaders in instrumentation.

Conclusion No useful lesson was learned by the factory managers, except for one young man who was designated the export manager. He became an adept pupil and, after three years of close association with us, would do well in a western firm as a marketing manager. But his colleagues were jealous, sabotaged his work and made life difficult for him. He will probably leave the firm, which will then revert to the attitudes of the Command economy and fail to make progress.

CASE TWO

An attempt to get an order for making parts from a major British engineering firm

This firm was persuaded by a British adviser to a Russian military engineering factory to take the first essential step to gaining the confidence of this British firm, which was exporting its well regarded branded products into Russia. If the Russian factory could satisfactorily supply parts, then the orders would expand and finally the British firm would place orders for the manufacture, assembly, sales and servicing of its expanding business for the whole of the Russian Federation. This was regarded as a very important opportunity by the factory management and by the British advisers. The crucial step was to demonstrate the technical and commercial competence of the Russian factory through fulfilling a trial order for 500 in number of identical units of a relatively simple component which, however, had to be made within precise tolerances.

The attitude of the factory Having studied the British drawings, this was felt to be a trivial matter since, they stated, the factory's machining equipment was excellent and the work force and engineering supervision was of a high quality. The precision required was easy, they were used to finer tolerances in their former military work. The factory was left to fulfil the order without advice from the British group; they were responsible for the pricing, quotation, manufacture and delivery.

The result The machine-shop was instructed to carry out the job, no one from the supervisory staff inspected the job lot which was packed, sent and delivered in England. The British firm inspected the 500 units and found to their surprise and regret that each piece had one or more of their dimensions outside the required limits; furthermore hardly two of them were identical! The British firm expressed their disappointment not only with the Russian factory but with the British advisory group for wasting their time, for persuading them that they could expect good quality machining to the required standards. As a result the firm is unlikely again to consider having its products made by a Russian-managed factory.

Conclusion Had this been in a western factory, the general director and chief engineer would have personally inspected and measured every component since this was a key order which would have opened the door for them to an important collaboration with a major western company with long-term commercial, financial and technical benefits to the Russian factory. No senior engineer bothered to do this and trusted their ordinary Inspector and mechanics to perform the job. They overlooked the fact that normally, their inspection system rejected a high proportion of the output. This fact probably had sunk into their sub-conscious mind as a given fact which they were used to living with. It was, of course, unacceptable in current trade with an advanced industrial firm which is accustomed to getting the quality it demands from its suppliers, usually without inspecting the goods It receives.

This example prevents one from being optimistic about sub-contract work based only on production skills and the ability to work out a realistic price and to deliver the product; no marketing knowledge was required. The factory was considered to be one of the best of its kind in the FSU.

CASE THREE

A factory which was accustomed to making high precision optical equipment for the Soviet Army realised that the demand in civilian applications for those products was severely limited; so it sensibly decided to diversify into a related area. It engaged a specialist in laser technology from a local research institute. Together they developed some products, some of which were in medical instrumentation, In which neither the specialist nor the factory had had any experience.

The prototype worked adequately well, and met western performance standards to judge by advertised data in the literature. The factory made no attempt to study its foreign competition in any detail, it had no idea of the competitive prices, state of the art abroad or what was about to enter the market. Nor did it make any enquiries in western hospitals or medical research institutes as to their requirements and whether they might be interested in testing the Russian product. The job was approached purely from a standpoint of technology and ability to make the article. It performed its function reasonably well but it looked cumbersome and was not easy to handle. The design was inadequate from the point of view of looks, ergonomics and also, it transpired, from a safety angle by western standards.

The British advisers tried to persuade the factory directorate that since the idea seemed a good one, it was worthwhile to follow it up properly. They explained that this would be done best by setting up a small business cell to deal only with medical instruments based on the laser technology. This would do all the market intelligence, identify the plus and negative points of the actual and potential competition and consider the design, manufacturing standards and costs from the market aspect. The team should have its own design engineer, cost accountant, manufacturing engineering supervisor and should be led by a person who would become skilled in commerce, marketing and selling abroad. The small inter-disciplinary team would be totally responsible for the success of the product group and would report to a deputy to the general director. It would of course request work from other departments of the factory such as manufacturing and purchasing.

The factory response The factory was organised by the speciality of manufacturing departments - optics, electronics, machining and so on. To create special cells would cut across this organisation and would disrupt the system; furthermore the chief engineer always had the final word on technical matters and would not take orders from a commercial person. He would rely on the superior qualities brought by a well-known specialist in laser technology to get orders.

Result The products never reached a production phase and they were never sold abroad.

Message One cannot compete in a market economy with the introspective orientation which thought outward from the factory and from technology instead of inward from the market. Technology and science to bring an income must serve commerce, not the other way around. Business does not come automatically, sales have to be worked for at least as hard and intelligently as the work of technical development. Selling a range of instruments to a medical unit requires different salesmen and marketing from those needed to sell instruments to a commercial research department because each sector has its own needs, language and attitude which have to be matched by suppliers. Suppliers do best when they are organised by market sectors not by their manufacturing methods.

CASE FOUR

In the early days of "conversion" in 1989 a major military combine in Leningrad decided to design consumer goods for sale in the FSU; it chose to start with a grinder of coffee beans and also a household coffee maker. It began with the grinder because the factory made small electric motors and this application would use them and if it sold well the factory would be quite well occupied; it was a good idea. The designer looked at the leaflets of some well known western models and produced what looked like a good copy of one of the simplest and best selling brands. I was asked to advise on its potential. I found out that the factory had done no work to see if there was a demand for such a machine but I was assured that there was. Having examined the design and production of the electric motor I was a bit worried about the electrical insulation and safety aspects so I promised that I would have a prototype evaluated in the British Consumer Association's laboratory, where I had good connections. They tested it, found that not only would the electrical insulation system fail European standards but that the switch between the lid and the base would allow the motor to rotate the cutting knives with the lid off. This would be unsafe; it would cut the fingers of a small child or some careless person playing with it. The laboratory refused to test it for other aspects.

Result The faults had to be corrected by the design and manufacturing departments.

Lessons Do not copy something on the market, especially the exterior, without checking every detail; preferably think about every relevant aspect at the design stage, not later.

The coffee maker was also copied after studying foreign products. The designer finally settled on a Braun model; this was large and very heavy. The Russian version was even heavier; it resembled an old fashioned naval gun both in mechanism and looks. It would have been expensive to make and would not have competed with western designs which later came onto the Russian market.

Moral Copying is not a good way to succeed unless it is done the Japanese way, namely to look at the best available, consider how they may be improved and make a better product which should be continuously improved to keep up with the market.

Furthermore it is a poor policy for a factory and design department to make products in which it has had no experience. One cannot successfully produce packing machinery for macaroni in an aircraft design bureau; this was a case cited by Mr Kokoshin some years ago of the wrong way to diversify. He was right, every trade relies on the evolution of its products based on long experience. It may look easy after designing an aircraft to design such a piece of machinery. But the work of designing even an apparently simple consumer product cannot be despised by a weapons designer. He demands rightly the respect of others for his abilities which are in no small measure dependent on long experience of his customers' needs and upon the development and evolution of those detailed requirements as well as to understand the manufacturing processes and materials available for producing the articles. Such people should be the last to despise commercial design as beneath their dignity. Apart from anything else, successful commercial work in the civilian sector will provide much needed income which arms sales cannot provide. It is worth pointing out that Great Britain in 1995 exported goods to the value of £155

milliard, of which arms sales were only about £5 milliard. These are typical figures for the past few years.

In the case of the macaroni packing equipment, It would have been better to engage an experienced design engineer from Italy to run the drawing office than to waste all that time, money and effort to produce a failure.

CASE FIVE

A rush to diversify products

Scenario In 1989-90 factories of the MIC made strenuous efforts to use their technology to make things that would sell in civilian markets. For example, those that made magnetrons decided, quite rightly, that the same technology would serve to make microwave ovens. Several such factories did just that. They made no commercial enquiries concerning the demand, they did not take into consideration the actions of other firms in their position. The demand did not reach the expected figures and there were too many suppliers. Furthermore the products were not the equal of imports which began to enter the Russian market in 1991/92.

Comment The rush to action should have included firstly some basic market research, secondly it would have been wise to look more carefully at the range of foreign products in order to be more sure of making a good product. Of course, the firms could not have expected the change in 1991/92 with a market open to imports.

CASE SIX

During 1995 and 1996 I was invited, not as a TACIS consultant, but totally unpaid, by the Research Institute in Moscow designated by the then Goskomoboronprom to commercialise the MIC. My expenses were paid by my own budget within the UKMOD. During one visit, I was asked to comment on about 80 business propositions submitted by factories and research institutes of the MIC in order to assist the decisions which should be funded and also how to Improve the proposals. The general standard of the submissions was not good enough to submit to any western Board of Directors or financial institution for funding. To be brief the weaknesses were invariably as follows:

Inadequate exposition of the advantages to the user of the idea, assertion without evidence of its superiority over other products, absence of analysis of good and bad points of competitive products, no discussion of how else the purpose might be achieved and therefore the proposal lacked data on technological and indirect competition. This leads to a naive statement that “there is no analogy in the world”. In turn this led the authors to assume that foreign firms would rush to buy the product or to licence it. Another series, about 280 proposals for licensing of so-called innovations, which were considered by a Russian Ministry as “ready for commercial exploitation” was equally inadequate. For example one proposal simply read “Algorithm for the solution of complex problems”; everyone has lots of those! Obviously it was impossible to evaluate such a statement. It was not worth considering. Superficial financial data on costs, confusion between cost and price both of their own product and of competition cited, no analysis of market, potential demand, position of the new idea in the market, too much was assumed concerning volume of sales, over optimistic assumptions on the speed with which sales could be achieved. No discussion on the means of distributing and servicing the new product, especially abroad. The amount of dedicated fixed and working capital was

also heavily understated. This led to an impossibly short pay-back time and to an unachievable rate of return on capital invested.

All these weaknesses are understandable when we remember that the directors of the factories and other institutes had never been required to do that sort of work in order to get funds from the Government and that they had limited access to foreign information on the state of the art and market for the ideas they were submitting.

The directors of the Institute were very experienced engineers in the design and analysis of control systems for weapons such as missiles. They were highly intelligent people with whom it was stimulating and a pleasure to work. Discussions on the issues just listed, as well as others developed over several days into detailed discussions of the problems and how to do the work according to the standards and requirements of a market economy to which the institute was instructed to lead the MIC. They rapidly understood what had to be done and it is to be hoped that they would organise the necessary training classes for the directors of the MIC. Indeed, after I commented favourably on one apparently excellent technical idea but mentioned that more information was needed, the general director and his chief engineer travelled to Moscow to discuss the project with me. These two were also excellent people, who immediately understood what I was asking for, produced the data and we reworked the proposal on the spot. They commented that it never occurred to them that it was essential to provide the information which I suggested was vital to successful consideration by the western firms and the banks located in Moscow whom they were approaching. Their ability and rapid understanding was very encouraging. I hope that their product would be sold and licensed in the USA.

Lessons Progress on reconstructing the MIC is best done in very small working groups between experienced experts using local real cases rather than theoretical instruction using western case examples and teaching in large classes.

CASE SEVEN

Not all the "innovations" had such good prospects. Here are some examples of optimistic proposals to sell "unique technology" abroad

7a. In 1987 I was shown, intones of great self-importance and as if uncovering a great discovery in a military factory in Leningrad such a "unique idea with no analogy elsewhere". The scientist told me that he had developed a process by which ordinary carbon steel was given such superb anti-corrosion properties that It would not corrode even in sea-water or on the surface of the sea. He showed me the process; it consisted of packing the article in a salt of chromium, placing it in a high temperature furnace which caused the compound to form a chromium halide gas which was infused into the surface of the metal component. I was sorry to inform him that *i)* this process had been in commercial use In Great Britain to my personal knowledge since the 1950s and *ii)* the claims were exaggerated, protection was much more modest. The young man was shocked, immediately protested that this was impossible. I wrote the name and address of the British company.

Lesson Be sure that you have the facts right, study world literature and do the experiments properly and do not rush to make exaggerated claims. This only causes those who know better to lose respect for you and to be cautious in accepting claims from the people in the FSU.

7b. One project submitted by Goskomoboronprom concerned a version of the Wankel internal combustion engine. The proposer had done no practical work had not considered what was involved In overcoming the obvious defects and problems of the idea and yet believed that a foreign company would be eager to invest in its future purely on theoretical considerations. I pointed out that millions had been spent in vain on the Wankel, but the deficiencies had not been overcome and that there had been no successful commercial exploitation. Furthermore, the automobile industry had over the past decades steadily improved the efficiency, cost, reliability of the conventional engines and had also considerably reduced the unpleasant emissions of the products of combustion. This evolutionary approach together with the investment in designing and making them represented huge investments; there were further improvements such as plasma combustion which promised yet more improvements in lean burn, use of other fuels and better efficiency. Therefore the industry would not risk investment in R&D of yet another "revolutionary engines whatever its theoretical potential advantages. They had better ways to spend their money.

7c. The same is true of a proposal submitted by a theoretical chemical engineer in Ukraine. He thought that the most dangerous emissions from an internal-combustion engine were due to the aromatics, the benzenes, toluenes and xylenes and therefore proposed to eliminate them by chemical treatment of the stream from the cracker. It did not occur to him that without the btx's the fuel would be useless. In fact the proper course in the FSU is to insist on the proper tuning and maintenance of petrol and diesel engines as well as the application of the better designs of combustion heads and system already in use elsewhere.

Lesson The problem here is that such people have never had to solve practical problems and when they are faced with one retreat into ever more abstruse and irrelevant chemistry.

7d. A very competent applied mathematician proposed to me his revolutionary Idea for a truly unbreakable coding system which he wished to sell especially to banks in the west. I submitted this to the cryptographers in UK. They reported that this work was at the level of a clever High-school mathematician working in the late 1930s!

Lessons
(i) So called "inventors" come by the dozen, especially from outside the industry. There are numerous British patents which will never recover the few thousands of pounds spent on filing the patent, especially in this field. It is estimated that less than 1% of all UK patents are ever taken to a commercial phase and not many of them are profitable. It does help to understand the outlook of the particular business into which one attempts to sell an advance which may indeed look attractive in a laboratory, especially an isolated one. Scientists in the FSU are usually even more remote from commercial realities than are amateur British ones.

(ii) "The devil is in the detail"; no innovator can afford to be only an 'ideas man' and to leave the working out of the idea to others; he must do enough of the work to convince others that it is worth Investing their money and resources in it and above all why they should divert their efforts from their already chosen paths to another, untried one. There is very little free money, scientific and managerial time; there are always choices to be made between competing claims on resources.

(iii) One should not fool oneself by one's own illusions or those generated by nationalistic or political propaganda. It is unlikely that most of the so-called backlog of scientific innovations developed for military purposes in the FSU will result in profitable exploitation in civilian applications. This has not proved true in the West either, where in fact in many sectors the applied science and technology of civilian firms are actually ahead of the military work; there has been a steady flow of new technology into the military from civilian sources. The isolation of Soviet scientists provides another reason why they find it hard to make a realistic assessment of the potential of their ideas. A very rigorous selection and assessment is essential.

CASE EIGHT

Selling to foreigners

In the USSR sales and purchases of technical goods from abroad were done through a few international trade organisations representing major industrial sectors. Our experience of these organisations was that they were well informed commercially, were hard negotiators but once they made an agreement it was always carried out. It was true that they were not technical experts so such problems were referred to the industry whose representatives sometimes appeared in the discussions. It was, unfortunately, a direct consequence of the system that the industrialists did not acquire commercial knowledge or skills.

8a. My group at Imperial College of London University has a contract to develop a high performance alternator for generating auxiliary power. The alternator works well and required a small gas turbine to drive it. A Russian manufacturer of engines for missiles has exactly the type that would fit our alternator. The success of our production prototype would have led to orders for quite large numbers of gas turbines. The discussions were spread out over a year and everything was apparently agreed. Just as we expected to sign a contract and to take delivery of the first turbine, the Missile Factory stopped answering our communications. After some weeks we bought the same thing in former Yugoslavia without any problems. We still have no idea why the factory stopped talking to us.

8b. *A successful commercial negotiation but with disappointing financial income to the Russian side.* One of the most important groups in Russian aerospace sold the rights to manufacture its system of altering the vectoral thrust of the engine of a fighter. This had several advantages over the way the British did the same job in their renowned and widely sold Harrier jet. The Russians became very upset when they realised how many such engines would be fitted over the next decade or so by the Americans; the true worth to the Americans of their invention was perhaps an order of magnitude higher than that with which the Russian were content to accept in the contract. As a result some people in the Russian defence industry talked darkly of an unfair contract and of exploitation by the west.

Lesson I had a quiet talk with my colleagues in Moscow and explained that the error was on the Russian side; they had failed to estimate the potential of the application by the USA. It was easy enough to do so since the actual and projected sales of the leading US fighters such as the F-16, -18 and developments therefrom are in the public domain, furthermore the projections can be extrapolated from recent trends and modified to take account of recent market changes. This the Russians failed to do. They could have easily worked out the costs of the American aircraft manufacturing industry in official US Government documents which give labour rates by location and industrial sector. This would have given them a basic cost advantage of their invention compared with the existing technology. Lastly they, as the innovators, would be in a good position to estimate the advantage to the user in performance reliability etc of their system. They did none of these things and seemed to have gratefully accepted too quickly the contract which was for millions of dollars.

As for the “unfairness of the American behaviour”, I suggested that a Chess Grandmaster or a poker-player does not deliberately play less well against a weaker opponent.

Conclusion Once again the Russian defence industrialists must become at least as competent commercially as their competitors. They have until recently never had to face the commercial situations which are natural to western firms.

8c. On a lighter note. Trivial but still instructive.

Situation I had to make a presentation to a Minister of a Republic. I wrote the Russian text, went to a private bureau which offered office services; we agreed a price for them to produce type script from a word processor on separate sheets In large bold type. I returned at the agreed time to be told that the price was now three times that which we agreed. I enquired why and got the answer “do you not know the capitalist law of supply and demand, we now know you really need it so have raised the price!” I refused, pointed out that in every civilised economic system agreements had to be honoured and that in any case they had misunderstood the nature of the Law they quoted. I would make do with copies in smaller type from my own word processor. They then agreed to take the originally quoted figure.

Moral Mutual trust is a fundamental necessity in business.

Conclusion from these three examples Things would have been better handled in the old days in Smolenskaya Sennaya, the turbine would have been delivered, the aircraft combine would have earned at least 10 times as much as it did and there would have been no defaulting on an agreement to perform a service. People handling commercial work in current structures have much to learn and would have advanced the discussions to their advantage in other cases mentioned above.

CASE NINE

Some technical problems in energy conservation

9a. Saving hot water in a city in the FSU.

Scenario Following a study in collaboration with some western advisers, the Government had decided that they should introduce a system of metering water to individuals living in apartment blocks, as well as industrial and commercial users. Two scientific research institutes in the MIC, with which I was working, were asked to recommend a system of metering and of supplying the meters. I was surprised with their first recommendations to buy a very large numbers of meters from a west European firm, which as it happened I knew well to be an excellent one. I asked if there were any local meters made in the FSU. The other institute found them. So I pursued the basic question; once the water is metered what should be done to economise it? It is all very well making people aware of the cost of a resource but they have to be able to economise. I was well aware, having worked and lived on and off in the USSR since the middle 1950s, that people did leave hot water taps running, the gas burning in cookers and so on. But there was another source of waste which was very significant, namely the central heating system supplied to every apartment block, commercial and industrial factory. As I well knew the system was supplied from a pipe from the central generating station, a branch pipe ran through the building with radiators at frequent intervals ranged in series and out again to the main pipe. In all the buildings that were known to me there was no means of regulating or shutting off the supply of water to each radiator. This meant that those nearest to the entry point were hottest and those furthest away were colder. This meant that even in winter some rooms were too hot and the only way to keep the room at an acceptable temperature was to open the window thus wasting heat. This is a basic design fault that I have seen all over the USSR. The obvious thing to do was, as is the case in western designs of such systems, to fit a bypass pipe around each radiator with valves that could reduce or completely shut the flow of water to the radiator and to allow it to flow through the bypass pipe. The job required nothing to be imported, not much expenditure, only readily available standard pipes and valves and the employment of a good plumber and welder or the use of compression joints which need no welding.

I took advantage of a previously arranged discussion with the Ministry of Industry and the MIC to raise this point. The Minister said my solution was impossible because the pipes to the radiators were imbedded in the concrete. I showed him the pipe system in his own ministry, where the gap between the pipes and the wall varied between 100-150 mm, more than enough. He was astonished. He had obviously never looked even in his own building or his apartment, he just accepted this as a truth without testing it.

The result In spite of the fact that the people in the second Institute were not only engineers who understood the basics but knew how to put solutions into practice and readily agreed with my suggestions, nothing happened, the territory continues to waste hot water in spite of inviting teams from the west to advise on economising energy. There are many examples from Soviet times chronicled in satirical stories; things unfortunately have not improved.

9b. In the same city, a British team from the Government Energy Efficiency Centre had produced a very good survey of some factories and had made the obvious recommendations which would have incurred no significant cost. Unfortunately the General Directors of the factories studied were not Interested and did nothing to implement the recommendations. In Britain as a result of steadily implementing sensible, mundane solutions over the last four decades we have reduced the use of energy in buildings and in industry and manufacturing processes by a very significant degree. The use of energy in heating buildings has reduced significantly and by using better processing equipment the unit of energy per unit of article produced has dropped by over three times. No fundamental science is needed, just good engineering, sensible managers and a culture of care in the population.

CASE TEN

Buying an expensive licence from abroad and still failing to achieve the desired result

A factory that used to make transporters for ICBMs looked around for other products. It decided to make state of the art western coaches, busses. The Republican Ministry authorised the payment of the equivalent of $20 million to a West European manufacturer for the licence to make the coaches in the factory. The design and manufacturing data came on a CD-ROM which the factory could not handle or interpret. It took some time to sort this problem out and the factory made some 18 busses to fulfil their first order. The firm had taken a step which it thought was in accordance with western practice; it created a sales company separate from the manufacturing organisation. The sales company received the money from the buyer but did not pass the income to the factory, which was of course unable to buy more materials and components to fulfil any more orders or to pay other costs including wages. Consequently the business stopped.

Lesson In the west a firm will always have a Sales department, usually it will be part of the company as is the manufacturing arm, they together with design, development, technical service, purchasing etc., all are just parts of the firm whose accounts are unitary. Each part works for the good of the whole. Sometimes there may be a separate sales company but this never stops the proper flow of income where it properly belongs. In the FSU case, the sales firm paid money to the state and retained the rest to enrich itself and its “collective”. Similar accusations have been seen in the Russian Press levelled against “Rossvooruzheniye.” Such practices are not part of an honest market economy; they are just theft and represent an exploitation of honest working people; one day they will react! Westerners also become more cautious about assisting the MIC to reconstruct itself.

CASE ELEVEN

Reducing pollution and monitoring the environment

11a. Pollution from industrial and military operations is an inheritance from Soviet times; many authorities would like to begin to clean up the air, land and water. In the FSU we have observed the involvement of research institutes of the MIC; in one country they planned to place many tens of thousands of sensors to detect a range of chemicals, smokes and radiation in fields all over the territory and to connect them to a national monitoring centre. The purpose was to identify the kind of pollutant and its source. However in that territory there is no law, enforcement agency or trained inspectorate that would be able to analyse the reason for the pollution and to order the factory, for example, to take the necessary steps to prevent that emission.

Comment This approach seems strange to western specialists who have tackled the same problems with success over the past decades. It would squander millions of dollars to no avail, whereas our experience shows that it is not difficult for experienced environmental protection engineers to identify the causes and to recommend solutions. But there has to be a proper legal framework to back up their recommendations to the owners of the polluting source. Such an approach tackles the problems at source, is much cheaper and more effective than the grandiose approach set out above.

11b. A second aspect was to be found in a country to the west of the FSU. This country had been allocated 80 million ECU to start environmental improvement operations. I was asked, as a professor involved in the Environmental Technology Centre of London University to recommend a training programme for that country. But the authorities not only had no legal framework but also had no environmental inspectorate which would provide jobs for the graduates of the programme. They were expected to stay in a technical university and to do research!

Comment The problems and solutions are generally well-known and amenable to straightforward and common-sense solutions applying chemistry, physics and mechanical engineering and of course inculcating a technical culture and discipline within the work force and directing staff. The approach in these and other FSU countries smacks of the illusions of the Potemkin Village which are preferred to simpler, more direct and cheaper realities.

11c. In May 1997 I attended a NATO funded seminar in Dnepropetrovsk on environmental pollution. The contributions of the Ukrainian participants from technical research institutes and polytechnics were mostly theoretical; when they were faced by a western delegate with the realities of one or other of the real problems, such as emissions from road vehicles that they purported to address, the standard reaction was to retreat into ever more abstruse and irrelevant chemistry.

Comment The impression given was that such people have never solved a practical problem and do not know how to do so. It is to be observed that the USSR published a significant share of world literature[1] on pollution problems and at the

[1] "Environmental misuse in the Soviet Union", Ed Fred Singleton, Praeger Publishers, NYC, 1976.

same time was the most heavily polluted of all the Industrial countries. Theory without practical application seemed to be the preferred mode of conduct; unfortunately it has not changed much.

However we have been asked to propose a training programme for engineers working in the local industries so that they may, themselves, begin to improve their own operations. If they will be allowed to do so without legal sanctions remains to be seen.

11d. Following the seminar, I was shown the problems of water supply to some important Ukrainian cities. The water authorities wanted us to provide a system of reducing the metal pollutants from the bore holes. Technically there is, of course, no problem, it would cost only money but a lot of it. But it became clear at the end of the discussion that the water from the wells then passes to the inhabitants of one city through 350km of very old iron pipes; the analysis of the local experts showed that the water is then contaminated in those pipes with the same metals by much more than the amount coming from the wells.

Comment This of course damns the proposed project, it Is pointless to clean well water only to recontaminate it. The cities could not afford to adopt the solutions to line the pipes with polymers or to replace iron pipes as we have done in the west over many years. Preliminary calculations show that it would be cheaper and more effective to continue to pump well-water but to filter a small proportion in small individual filters in apartments, restaurant kitchens and so on. The authorities, to their credit, admitted that they had thought of this solution but had not pursued it because they had no idea what the costs would be. They preferred to ask a western bank for the money for the original project. It is unlikely that this will be forthcoming.

Message Always ask the basic question In any business study “How else could the objectives of your proposal be met?” Do not jump at the most obvious answer.

CASE TWELVE

The advice of a western consulting firm to diversify an explosives factory

Scenario This factory, like so many others in the world, faced a severe contraction of demand and searched for alternative products and markets. The consultants researched ten prospects. For each they provided an analysis of the world markets, supply and prospects for the proposed new family of products, nine of which were outside the experience of the factory. This survey was compiled from world literature and would have been helpful had the factory been able to export its products. The consultants followed this with an analysis of prospects within the FSU and a preliminary proposal for the necessary provision of new manufacturing equipment.

Outcome I was asked by TACIS, which funded the study, to evaluate the work of the consultants. My expertise concluded that their reports took no account of the Russian conditions which adversely affected the supply, technology, production skills and commercial problems that would have to be addressed. In particular the assessment of prospects for sales was superficial and optimistic; the foreign consultants had done no investigations of the market themselves but had merely taken some opinions of the factory staff. Since the Russians had no experience of these markets nor how to go about finding out what they were and how to serve them in the rapidly changing circumstances in the middle 1990s, It was not surprising that the commercial studies were unreliable and gave no confidence for the Investment and reorganisation of the factory that would be necessary to serve 10 distinct markets. The nine projects for various crucial reasons would fail in my judgement.

The tenth recommended an extension of a subsidiary business in which the factory was already engaged and in which it was competent technically and in production. The consultants and the factory however had overlooked the need to add a commercial arm to that business in order that an expanded output could serve a highly competitive world market. The TACIS executive, on reading my report, asked me to discuss it with the consulting company. I had a frank conversation with them, in which they agreed with my evaluation and criticisms. The weaknesses of the work, they said, were due to the fact that they themselves were not experienced in each of the fields that they recommended and passed the work to some of their associates in their own country. These firms were well known western operating, not consulting, firms. Had they been advising a factory in a western country it is probable that their work might have achieved some success, but they knew nothing of Russian conditions, sent young, inexperienced people to Russia, who not only were not regarded highly by the Russian staff but worked superficially.

Lesson The chances of failure and disappointment are high with Western consulting methods especially if carried out by young staff who have never done a job within the industry that they are advising or in the product sector that they recommend. Much better results are to be expected by collaboration with senior and experienced people from abroad. This can be done either by secondment over long time as in the newly created programme by EBRD called “technical assistance to management” (TAM) or by unpaid volunteers through organisations such as

British Executive Service Overseas (BESO) and finally by finding a foreign firm to work in partnership to develop the CIS market to mutual profit and benefit.

CASE THIRTEEN

And Conclusions from these cases, which are typical of many others

This final example serves as a concluding moral to *the problems and suggested solutions set out in this paper.*

Electronics

Scenario The introduction on the commercial scale of reliable semi-conductors arrived when the USSR was still emphasising heavy industry and its derivatives for major weapons. Its radio and control systems were rudimentary and based on thermionic valves. This coincided with an intensification of the Cold War, as a result the West denied the USSR the opportunity to acquire by normal commercial means access to its basic technologies. Consequently the USSR did what it always did when it felt it had to catch up, it instituted massive crash programmes. The time needed to do translate theory into reliable practice was not given by the political imperatives. "Bystro", especially if accompanied by threats, like big projects, factories and Institutes, is not conducive to good results.

The race to the "Cosmos" in USSR and USA was important for prestige as well as for military reasons; a considerable input came from the German work developed In the second world war. German scientists and engineers contributed to the American and the Soviet space programmes. The Japanese and American dive to design and produce ever smaller components and aggregates based on electronics had its own problems but once overcome they led to more efficient, faster and eventually more reliable components and systems. The Soviet control instrumentation in Space, thanks to much more powerful rockets, ignored miniaturisation and relied for the early Sputniks on well-tried Instruments and components such as Jones plugs and connectors. The electrical and electronic engineering of the missile control centres for Strategic Rockets which were open to inspection after 1991 were astonishing to us for their very backwardness and crudity. Yet we recognised their fundamental reliability.

But the industrial production of electronics, especially of base boards for printed circuits, the components to be mounted on them even of the simple building blocks such as electrical capacitors and resistors suffered from the basic weaknesses of Soviet technology and production systems. The technical materials were poor in quality, often the right grades for the particular job were not available and the output from production lines was very variable in properties. This was In part due to these faults but also to the indifferent technical culture which dominated the design, lay out, operation and cleanliness of the production shops themselves. The reject rate from the production and assembly lines was and still is extremely high; about 10 to 20 times higher than in factories managed by Japanese or Western companies. This of course, together with the rework, is enormously expensive and more than cancels out any theoretical advantage of lower wage costs. This is admitted even by Ministers in the Russian Government as well as by the General Directors themselves. All the weapons electronics businesses that I have visited and tried to advise suffer from the defects mentioned and no amount of discussion

seems to lead to a programme through the chain of supply of components and materials and of design and assembly that would steadily improve matters.

Consequently electronics was and still is one of the weakest sectors of Russian military hardware. Soviet and Russian design engineers did much to try to overcome the deficiencies that were well known to them. They made great strides in creating ingenious software designed to circumvent the problems and difficulties with hardware.

Since military products took priority over the civilian goods made in the same factories, the quality of the latter such as 'IV sets was certainly no higher. As a result the current free market in the FSU has led to the dominance of imported consumer goods that rely on electronics for control systems as well as because they are better engineered in mechanical engineering terms to give better value for money, better appeal, longer life and easier maintenance and better use of energy and other resources.

Electronics, precision engineering and micro-miniaturisation, such as nano-technology, lies at the heart of so much modern technology in medicine, surgery, household goods as well as in control of the communications systems. These systems depend crucially on materials with high performance, a superior technical culture in design and production; these are regrettably still missing.

People at the top of the Academy of Sciences and of the Government still pin their faith for the revival of Russia on "fundamental science" and seem to ignore the problems of applying science to the identification and solution of real problems. The Potemkin Village continues to flourish and so does the love of abstraction and philosophising! Plainly the well educated scientists and engineers can do with some essential further education in order to understand that technology has to serve commerce if the economy is to thrive and therefore that research and development in the natural sciences must be directed to serve those purposes just as in the USSR it primarily served military purposes. A wise policy would be to direct more funds away from curiosity-led science to work which will find a useful and profitable application in the civilian economy. This will create the wealth with which to pay for a modest amount of fundamental science. The policy of successive British Governments has been in this direction. Unless the FSU can dramatically improve its performance in these fields it is doomed to continue the policy of the last 140 years to import foreign technology for even mundane purposes and to pay for it with the export of raw materials and minerals. If it continues with its present policies, its own technical progress to some degree will always be at the mercy of foreign countries. Furthermore since it exports goods of low added value in exchange for products of high added value, this cannot be good for the economy. Russia will never be able to exploit its own physical and intellectual potential resources unless it tackles these essential issues.

Finally let me say that many of the commercial and some of the technical errors described above were also common in Great Britain in the first decades after 1945. The firms that failed to learn from their mistakes went bankrupt and were closed. It is my view that enough time has passed in the FSU for the Governments, research institutes and factories to get down to the realities of change in order to avoid closures and bankruptcies. Surely we have spent enough time on discussion of general principles of reconstructing the MIC. It is time to get down to real work.

Disclaimer

The views expressed are those of the
Author and not necessarily those of the
UK Ministry of Defence

What Is Wrong With Western Aid To The FSU & Central & Eastern Europe And How To Improve It

*Editorial Note: The European Commission responded to the points made in this paper, written in 1995, **inter alia** to the effect that they highly appreciated the list of eight recommendations, some of which were already the subject of action in their part.*

Summary

In the last 4-5 years billions of western taxpayers' money have been spent. Hardly any practical real benefits to the Commonwealth of Independent States (CIS) countries have resulted. Somewhat better results have been seen in Central and Eastern Europe (C&EE) countries but in the assessment of many objective specialists they are hardly commensurate with the efforts expended.

In spite of the massive aid programmes, of the myriads of consultants, seminars and conferences devoted to reform, economic reconstruction and other crucial matters, the former USSR shows very few, if any, real advances toward improvement in the essentials of government actions. These must be to lay the foundations of:

- proper civilian, democratic control of the military,
- sensible democracy, coherent government,
- good relations with neighbouring states and ethnic groups within the Russian Federation and in its "near abroad" and with western Europe and NATO,
- policies to provide a reliable framework for honest, civilian activity in commerce, industry, agriculture and science such that the infrastructure of the country can be improved and so that business can become competitive in a market economy.

It is not far fetched to assert that the West has lost the opportunity to influence events in Russia in a positive direction. This failure is due to illusions, faults and errors traditional in Russia and reinforced by Homo Soveticus. To set out such attitudes is merely to understand, not to criticise the local people; they could not be otherwise. Most westerners, especially in the aid agencies, are also ignorant of basics in the territories they plan to advise. They do not understand local history, culture and the current situation and needs. Many western advisers are also naive and arrogant. It is up to them to learn in order to be helpful.

Western aid agencies have in general displayed a tendency to use aid to fSU and C&E Europe as a vehicle for experimenting with their own prejudices and theoretical preconceptions, especially in macroeconomics. In TACIS[1] in particular this has led to poor project formulation, extravagant budgeting, a sense that their main function is to spend money allocated by the national participants regardless of

[1] Technical assistance to the CIS.

whether or not it produces results in reality. There is evidence of poor management, poor coordination, inadequate support of their own field officers by Brussels, regrettably also of poor criteria in the choice of consultants, corruption by their consultants with local beneficiaries and above all by inadequate internal and external evaluation during the projects and afterwards. Lessons are not being learned and attempts to point them out are resented in Brussels.

Recommendations are made in this paper to improve the direction, management and evaluation of EU programmes.

Introduction

M S Gorbachev, who rose through the ranks of the Communist Party bureaucracy, became its General Secretary. He was its first to listen to the briefings from advisers that the Soviet Union was collapsing under the weight of militarisation and inefficiencies. He attempted to reconstruct it through "perestroyka" by a reformed Communist Party. Dramatic economic programmes such as Shatalin's 500-Day Plan were published. They failed, inevitably. However the west owes Gorbachev much in the political sphere, where his politics led to the liberation of Central and Eastern Europe (C&EE). His economic and political policies led to the failed coup in 1991 by those who wished a return to the rule of the CP. As a result another Communist Boss, B N Yel'tsin took power. The USSR was formally dissolved, but was partly replaced by the CIS. The Russian Federation, with half the population of the USSR, most of its military strength and its military industrial complex (MIC) assumed its natural, dominant place in the CIS. Yel'tsin was elected its first President in 1991.

Both Gorbachev and Yel'tsin appealed to the West for economic assistance. As a result a whole new industry sprang into existence, that of aiding the former USSR and C&EE to make a transformation to democratic government and to a market economy. Participants ranged from newly created banks such as the European Bank for Reconstruction and Development (EBRD), through programmes created within NATO, the European Commission and by national governments with bilateral arrangements to individual countries. In the last 4-5 years billions of western taxpayers' money have been spent.

In spite of the massive aid programmes, of the myriads of consultants, seminars and conferences devoted to reform, economic reconstruction and other crucial matters, the former USSR [in 1995] shows very few, if any, real advances toward improvement in the essentials of government actions. These must be to lay the foundations of:

- proper civilian, democratic control of the military,
- sensible democracy, coherent government,
- good relations with neighbouring states and ethnic groups within the Russian Federation and in its "near abroad" and with western Europe and NATO,
- policies to provide a reliable framework for honest, civilian activity in commerce, industry, agriculture and science such that the infrastructure of the country can be improved and so that business can become competitive in a market economy.

The territory of the USSR is regarded by many Russians as their natural, historical homeland. As a result of its break up, the people have lost their sense of national identity and may, if things get worse, support irredentist and military adventurism. At the same time the serious decline of the economy, has left most of the population far worse off than they were under the Communist regime. Large scale, organised crime and corruption is rife and out of control of the Government and organs of law and order, who indeed are often participants in that corruption. The struggle for power and privilege has several dimensions: between President, Government and Parliament; between the bosses of gas and oil industries, the MIC and the new traders, between the Muscovite centre and the regions. The Armed Forces are also divided but are almost a separate State within a State. They have their own agenda for reconstituting a formidable armed force without which they see Russia as "Upper Volta without Rockets." To return to the past of "Upper Volta with Rockets" would restore the punctured pride of many, even outside the military.

This process, to many Russians, comes before the creation of a respectable infrastructure and of a competitive economy. They do not see that restructuring the MIC, for example, would allow them both to retain an arms industry and to support large scale employment and their civilian economy. For such people it is imperative that the West would once again respect Russia as a Great Power. The injection of hard currency *(valuta)* has not assisted the process of reform of the economy. Huge amounts of *valuta* have been recycled abroad and deposited in the names of private citizens. Russians demand financial aid to be paid without strings with the aim of continuing to fund the unviable activities of the old regime. These run to subsidies for the MIC, transport, fossil fuel extraction, the military, and science.

The present parlous state of the Union is seen by many as the fault of the West. Amongst other accusations they cite the reduction to beggary of the ordinary, honest Russian people as a result of its erroneous advocacy of top-down, macro-economic reforms; the descent of hundreds of over-paid consultants who are seen by the locals as enriching themselves and providing no benefit to the intended beneficiaries. There is much truth in these criticisms. The external pronouncements of the President and his Government are designed to convince the IMF et al that they will pursue reforms vigorously and that the economy will improve. Not only have the reforms failed to produce useful results, not only are the internal pronouncements and actions of President, Duma and Government plainly at variance with the public assurances but no proper steps have been started at the lower levels of the working economy. I shall discuss my proposals at the end of this paper. The European Union, ludicrously, is blamed in print for bribing some republics to secede by promises of western aid; its consultants are said to be doing the job of western intelligence services by their work in the MIC. NATO is again seen as the enemy. In short the West is being demonised. The dangers to the West of these views are obvious.

The fSU is basically unstable and may lurch into further economic and political chaos. The post-euphoric, post-soviet time has every chance of developing unpleasantly for itself, its near neighbours and for the West. A possible scenario is for the CIS to reconstitute the MIC, the military unitary structure and an economic union dominated by Russia. The signs are there. To take just one example, Russia is operating a debt-equity swap with Ukraine and Belarus, taking shares in their MIC, oil and gas distribution and refining assets in return for cancelling huge debts owed for energy.

It is not far fetched to assert that the West has lost the opportunity to influence events in Russia in a positive direction. This failure is due to illusions, faults and errors traditional in Russia and reinforced by Homo Soveticus as well as to the ignorance of most westerners, especially those in the aid agencies, of local history, culture and of the current situation and to the naivete and arrogance of much western advice.

This paper concentrates on Russia, Ukraine and Belarus. The three Slav republics, the heartland of the fSU, occupy a midway position between the non-Slav Republics further east and south, where the situation is far worse for reasons of national and ethnic history, and the newly independent republics that lie between the fSU and Western Europe, where, in most cases, progress has been better and where there is more ground for optimism.

This is due to several factors, especially:

- The shorter experience of Communist command rule,

- A residual memory of private enterprise from between the first and second world wars,

- In a few cases there is also a residual memory of democracy.

- All of them share a more bourgeois, western outlook than any in the fSU.
- All have the advantage of proximity to western Europe with its managerial talents, especially in their application to a market economy and also to the western markets themselves.

However there is no room for complacency or for satisfaction with progress. **The time has come for a fundamental correction to western aid policies, programmes and organisation in all those countries.**

This paper sets out to analyse the programmes of the aid agencies and to suggest a policy for their basic reform. Many of the comments and criticisms and all of the recommended changes apply to all the aid agencies to a greater or lesser degree. The paper is primarily addressed to the European Union but that body should not take the paper as singling it out for criticism and reform.

It must be emphasised, however, that fault lies on both sides - east and west, but it is up to the west to perceive clearly the errors, illusions, expectations and the real needs of the recipients and to understand the reasons for them. The failure of the western aid agencies and of many of the advisers, especially academics and publicists, to do so, lies at the heart of western failures to achieve useful aims in the territories.

There is no world experience that can guide us in the transformation of a massive Command economy to a market economy. The Marshall Plan cannot serve as a model in this respect, as some Americans think. It has to be remembered that the Hitler regime did not destroy private enterprise; the industrial and agricultural base of nazi Germany continued to be run by private entrepreneurs. The Marshall Plan financed the rebuilding of the shattered infrastructure and industry of western Europe, including both France and Germany. The victorious democracies of course did much to promote the transformation of Germany from a politically authoritarian

regime operating under an inhuman and distorted legal system into a country that has developed into a far better social condition.

People now in positions of authority in fSU and C&EE grew up under the system of a centralised command economy. They cannot be expected to understand how to make the essential transitions to democracy, civilian control of the military, a successful competitive market economy and the creation of the essential social and physical infrastructure to provide for their people. There is no alternative but for the locals to learn how to improve matters without significant foreign investment. But their instinct is to resist this approach.

Westerners must understand that Slavs, and Russians in particular, tend to believe in miracles. They will pursue old policies, say of subsidising loss making industries in the hope that something will save them at the last minute. In the case of the MIC this lies in renewed internal purchases of weapons and also for earning massive amounts of *valuta* by exporting. Another modest example is that of a big tractor factory in Belarus which was on its beam ends. It signed a contract to sell 3000 tractors to Pakistan and promptly decided to reject all western aid in restructuring since it could manage by itself. This view was dampened a bit when they found that because they had calculated neither the costs nor the price correctly they would lose massively on the contract.

If the west thinks it has something to offer the east then it is its duty to understand what easterners have to discard as they move toward a regime which enables them to advance toward democratic solutions and economic success for their people. The failure of the western aid programmes is largely due to the West's failure to understand. But this failure is coupled with its own arrogance, its own illusions, its own predilection for western recipes, which may indeed not have been as successful as its protagonists think even in the west but are largely inappropriate in the east.

Problems With Western Aid Agencies, Particularly With The TACIS And PHARE Programmes Of The EU

I will limit myself to economic affairs, the affairs of the MIC and its impact on the national economies. The examples are crucial to the countries concerned and are subjects in which I have many years of personal experience.

One might start with the recommendations of individual academic economists who encouraged Gaydar to launch "shock therapy". This was based in part on the idea that rapid dismantling of financial controls would encourage private enterprise and provide the basis for a free market economy. However they should have remembered the conditions in Britain at the end of the Second World War. Exchange controls had to be retained in one form or another for some decades by Conservative and Labour Governments alike. Had they not been retained it is probable that Britain would have seen the same financial results as we have seen in Russia since 1991.

The western economists had their own prejudices, especially in recommendation of privatisation of large manufacturing enterprises in fSU. These appear to have been based on a Thatcherite experience in Great Britain and upon Reaganomics in USA. Yet there, it took years, sometimes decades, to make that transformation. And yet the academics concerned and others working in EBRD and the EU TACIS and Phare

programmes have followed their own prejudices and theoretical preferences. It is tragic that even today they have not had the humility to study the consequences of that advice that are manifest in the territory over the past four years or so. It was obvious to all who understood the territories that these polices would lead as they have done to results which are disastrous for the economies and for the people of those countries.[2]

If early privatisation is inappropriate so is the current emphasis on developing small and medium sized enterprises. In manufacturing these should grow naturally from the steady restructuring of the giant factories. Another, specifically British disease which developed during the Thatcher years was to dismiss manufacturing and to argue for an economy based on service industries. Such basic errors overlooked the simple fact that service industries had to have something else to serve. In truth no economy of any size can survive without efficient agriculture and manufacturing, certainly not the fSU. Executives in the western aid agencies would do well to understand this.

Furthermore it has to be emphasised that in the fSU the conditions for successful small businesses do not yet exist. There is no banking system that understands how to lend to start up SMEs (small and medium sized enterprises); neither the banks nor others are in a position to advise one-man or small businessmen on elementary matters. The clearing system for payments, in spite of years of advice and promises, does not work. Withholding payments by government fictitiously reduces the published rate of inflation. The banks hold for months at a time payments to creditors by debtors. In times of high inflation this benefits the banks but the firms go broke.

There is a definite need for SMEs in manufacturing and in servicing such as repairs of consumer goods and cars. But, at least simultaneously, a reliable network of spares and deliveries needs to be developed. It also has to be remembered that employees rarely become successful businessmen, even in the West. British figures show that only a very small percentage of redundant employees opt for training in business, and of those that started the majority failed rapidly. Most prefer to wait for businessmen to come to the area and to offer them work. The success rates in fSU for the establishment of such SMEs will be even smaller.

Western aid programmes should be diverted from setting up Government aid centres to internal counselling within the old factories, to creating the opportunities for them in collaboration with local authorities, to developing a professional job seeking and advice service. This is the sort of aid done by regions of the British Employment Service for civilian redundees. Good work is also being done by the British-German Resettlement centres for military redundees. The work requires to be much more at "grass roots" level and less at the macro-economic level which is the instinctive approach of the aid agencies. The West must also avoid pandering to the Centrist instincts of the eastern authorities which require all reforms to be under the control of a Government agency.

There are several **conclusions** that must be drawn from this narrative.

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[2] Well-meaning but ill-thought out programmes combining aid and restructuring are not new. The British Government's disastrous Groundnut Scheme in Tanganyika in the immediate postwar period led to ruin for many willing workers.

- People who staff the Western aid agencies and economic advisers suffer from the mirror image of the faults of the executives, politicians and economists in fSU and C&E Europe, who have no idea what makes a market economy work and how to get there. The westerners have no understanding of the realities in the territories and how to move them toward a working economy and society along the lines of one or more of acceptable systems in a reasonably democratic, advanced industrial country. It is indeed possible that a Confucian model, such as the Japanese, suits the CIS more than does a west European one.

- It is simply not adequate to state as some westerners do: "Communism failed, capitalism won, do as we do and you will win." Whereas there is only one basic model of a European Communist Command economy, with minor national differences, there are many varied models of a market economy and of a democratic system.

- It is dangerous to ram one's prejudices onto others.

- Aid to C&E Europe and the fSU is not a fit subject for experiment with one's theoretical ideas, even those that might have been useful elsewhere.

- It is essential to understand the territory thoroughly before offering advice

- It is essential to test one's policies and programmes by achieved results and not by intermediate false and superficial criteria such as: the number of reports issued, the number of programmes leased, the number of conferences and seminars that have been run.

If those faults are not bad enough there is worse to come when we discuss the management of the programmes themselves.

The TACIS & PHARE Programmes Of The European Commission

[In 1995] TACIS has been active for about 4 years and is spending about 1 billion ECU/yr. PHARE has been active for over 3 years and spends about 0.5 billion ECU/yr. Both budgets are rising. TACIS is directed from Brussels, the representatives in the countries are directed not to intervene in formulating proposals which are suggested either by the national coordinator or by the staff in Brussels.

PHARE programmes are much more influenced by their local representatives. I have found in Slovakia and Lithuania, for example, that they are better targeted than the TACIS ones. It is unfortunate therefore to hear that the PHARE executives in Brussels wish to take back to themselves the control of those programmes. If these reports are true, the intention should be stopped.

Framing the Projects & Budgets

Since it is essential for the programmes to be useful it is essential for the national coordinator and for the TACIS representatives to work closely together, to learn what is useful and what is not. Most of my personal experience with the EU is with TACIS programmes and I find them to be improperly conceived and directed.

a) The terms of reference (TOR) are plainly drawn up by people who follow their own whims, preconceived ideas along the lines criticised above, based on theoretical ideas irrelevant or indeed harmful to the country, sometimes impossible to carry out by the chosen consultants. It cannot be right for TORs to be formulated by the Brussels hierarchy or by their chosen consultants, usually academics, with no connection, experience or understanding of the territory and its needs.

b) Some of the senior Brussels staff react emotionally when experts on the territory suggest that the project is wrong, should be scrapped or modified and is a waste of money.

c) Some projects are suggested by locals, acting either as intended beneficiaries or national coordinators. Many of these reflect the old ideas of the Command economy that they wish to leave. These people need gentle but firm and rational argument to show them a better path to achieve their objectives.

d) The TOR once written is sacrosanct, it cannot be altered by the national coordinators, the TACIS representative or by the consultants in the field.

e) The budget follows the TOR. It too is based on theory not on proper costing of the steps of the project. It is inflexible; once written, Brussels does not allow items to be changed by its own evaluators, experts on the subject and territory. It is clear from my personal experience acting in this capacity as an expert on Belarus that the intention and motivation of Brussels staff is to spend the money allocated regardless of its utility. I have been urged several times to find something else to spend the money on within the project when it was agreed between me and the task manager that the purposes for which sums were allocated were excessive.

f) Some people in Brussels are beginning to recognise that TACIS directorate could benefit from the advice of experts on the territory and on specific sectors. Accordingly, it commissions them to write the strategy paper for its forward programmes. I was asked to write, together with another person, the strategy paper for Belarus and for the needs of the defence industries to help them to restructure themselves to contribute to the civilian economy. I am a recognised specialist on these issues not only by EU but by NATO and the British MOD as well as by other national and international bodies.

Our papers were rejected by the Brussels hierarchy because they did not reflect the self satisfaction of the hierarchy, did not support their preconceived ideas and were considered to be likely to upset the Belarus government by the frankness of the papers and recommendations. Our personal experience is that the ministers and directors within the Belarus government are very amenable to sensible argument. We were not given the opportunity to meet them. Instead, the hierarchy demanded major changes in the papers to reflect their own vanity and prejudices. We modified the format to meet demands put forward late in our discussions with Brussels but finally refused to write what they wanted. This is very unsatisfactory. Experts should not be the lackeys of amateur bureaucrats whose aim is to promote their own ideas while hiding behind the reputation of the experts.

To sum up this section, it is clear to me that the strategy of TACIS is to pursue expensive, often irrelevant, programmes regardless of their benefit or otherwise to the territory. The Appendix provides examples of comments (a-e) above.

The Implementation Of Projects

There are reported to be 11,000 consultants on the EU lists, all vying for jobs with the prime object of making money. Very few of them are experienced in the territories or in the specific problems facing the sectors of the economy in those territories. Many intrigue to be short listed and look around for the few experienced experts to add to their lists in order to become qualified. Such consultant groups are merely "post-offices"; several have approached me and my friends simultaneously to be added to their lists.

There seems to be a policy within the EU to award contracts to consultants more on the basis of which country's turn it is to get one rather than to examine their competence. In 1992 when I was first asked to put together a team to study the MIC in Belarus, I was told that there were too many British subjects in my team, could I not find a Greek or a Spaniard?

There is some evidence that some EU staff collude with their favoured firms in order to ensure that they get contracts as opposed to a fair, open competition.

The EU operates a policy of engaging staff even at quite high levels from several consulting groups acting as intermediate providers. The contracts are for two to three years only; this prevents the appointee from becoming expert in the territory and its problems. The policy is also costly. It is EU policy to award a contract on a specific job to consulting groups only on a short term basis. If you do the first stages you are debarred from the follow up, even if you have performed to the satisfaction of all concerned. This is in spite of the obvious advantages of continuing experience. In the case of the defence restructuring in Belarus, the report that I wrote together with Coopers & Lybrand was not shown to the successor firm, British Aerospace and their report, with recommendations, was not shown to their successor, Thomson Sofitel. Each starts with a tabula rasa. This is a sheer waste of experience.

In spite of the audit procedures, there are examples of direct corruption between appointed consultants and their beneficiaries. For example a Deputy Minister in Moscow demanded 10% of the fee paid to our group of advisers and when we refused he said, "I went to Brussels as an independent expert to help to choose the successor firm for the next stage of the job you are doing. We selected a Spanish firm who immediately gave me 10% of their fee, why cannot you do so?" Incidently, it was plain to our team that the purpose of our assignment was not shared by this Minister. He wanted to manipulate us and to steer any report of ours to suit his own ends in internal squabbles with other Ministries. He had no understanding of scientific affairs and had no intention of adopting any sensible advice that we might give him. Consequently I wrote to the consultants managing the project and told them that I would not continue the project which would be a total waste of EU money and of our time. I also reported this directly to DG1. I refused to take further fees for the job.

In Moscow there were complaints that the TACIS national coordinator and his staff were flouting TACIS regulations by failing to transmit to the regions information on possible TACIS funding for jobs; these were kept for his Moscow cronies, it was said in some quarters. This needs investigation. But to my senses as a Russian myself, the man was untrustworthy.

In Belarus the national coordinators under the previous government were misusing the EC office for the commercial ends of their own private firms; they also spied on EC correspondence. One of their survivors was very properly required to resign.

Auditing The Work

The TACIS staff seem to judge the performance of consultants only to the extent that they have carried out the TOR. For example, in my 1992 Belarus project, we were criticised for failing to provide a list of military factories with much detail required in the TOR. I asked several ministries for such a list and each refused. Either they did not know or did not wish us to have this information. In either event, to have insisted would have led to accusations of espionage. The local KGB General had in fact, toward the end of our assignment, written to the Chairman of the State Committee for Industry to tell him that he was in breach of the old Soviet Laws, still in force, by allowing foreigners into the defence factories. The Chairman ignored the letter. The foolishness and naivete of the writer of the TOR can be seen in the request to set out the record of what military equipment the factory made. The information requested was basically irrelevant to the task ahead. The Appendix provides more instructive examples of poor attitudes both in Brussels and in fSU.

Professor Patrick Humphreys of the London School of Economics, who also has had experience of operating TACIS and PHARE programmes, observed to me succinctly, "The Court of Auditors will give you 100% marks if your report substitutes the past tense for the future in every phrase where the TOR states "The consultant will ..."

Neither they nor the staff in Brussels pay enough attention to the question of what has been achieved by the work.

In **summary** the deficiencies of the TACIS programmes as I have experienced them are:

- The terms of reference are written without adequate understanding of the real needs of the beneficiary and whether the circumstances within that country allow sensible objectives to be realised. There are faults on both sides - it is hard for locals and most westerners alike to work out what objectives can and should be aimed for to achieve the transformation to an efficient political-economic system. But since there is much more expertise in the West - outside the aid agencies unfortunately - of how the Communist system worked and indeed of the basis of transforming poorly performing organisations, it is up to the Western aid partners to work much more closely and professionally with their eastern partners. The West must take the lead in human relations, understanding and professional expertise.

- What we have instead is the work of westerners without understanding of the problems and way forward of the territories they are supposed to help. Many projects reflect the theoretical ideas and experiences elsewhere irrelevant to the fSU and C&E Europe

- Budgets are written without proper basis for costing the job and are then sacrosanct. The Brussels executives seem to be anxious to spend money allocated regardless of its utility. Many projects could with advantage have been recast, reduced to a proper modesty and drastically reduced in cost.

- There are far too many consultants, usually ignorant of the territory and its problems, who are engaged to write strategy papers, terms of reference etc. It

is true that the TACIS staff is small in number. But it could very easily do the work itself if it were more professionally competent. Its very incompetence leads to a waste of effort. Expertise in any field allows the specialist to come to a correct diagnosis and recommended treatment quicker than an ignorant generalist. TACIS staff and consultants, if they have had any experience at all, seem to have worked either in their national bureaucracies or in former colonial territories. The fSU is not Africa or South America.

- It is assumed, wrongly, that projects are best carried forward by western consulting groups rather than by people experienced in the exact sector requiring help. There are other ways, as I shall propose in the recommendations.

- Consulting groups seem to be chosen on the basis of "It is X nation's turn next" rather than upon the competence of the group. There is some evidence that EU staff favour specific nations and/or groups in a manner bordering on the dishonest.

- These consulting groups mostly see only a pot of gold for themselves.

- The locals say that they are tired of repeating the same facts to successive visitations, either by TACIS executives or consultants. Furthermore they perceive little or no practical benefit from their activities from these long exercises, which simply enrich the western consultants. There may well be an understandable envy of the rates of pay of westerners but the basic criticism is correct.

- The internal evaluation by TACIS staff until recently at any rate was far from satisfactory. It fell far short of what should be expected from a spending organisation, whether a department of government, commerce or a charity. It remains to be seen whether they will use their evaluators, of whom I am one, properly or as a whitewashing operation.

- The Court of Auditors appears to examine only a very restricted aspect of proper expenditure of money. It does not appear to evaluate the progress and utility of the project.

- The European Commission should be ashamed of the bitter, truthful remark applied to it by people in authority in Minsk: " We are sorry to see that Socialism is alive and well in Brussels."

Recommendations

The transformation of the fSU and of C&EE cannot be hurried; it will take decades rather than a few years. The West must therefore structure its aid agencies appropriately for perhaps half a century's work. This provides the opportunity for what is essential: the recruitment, training and management of a corps of professionals in collaborative aid. Competent staff can then look forward to a life-long career in a worthwhile job. It is probably beyond the realm of practical politics to get the aid agencies to cooperate in one Corps, but at least they might coordinate their efforts better than at present. The advantage of addressing this

paper to the European Commission is that these recommendations can be adopted by them.

1. Create a professional corps of people for a lifetime job. Each person should specialise in a territory. This requires fluency in the local language(s), good understanding of its history, culture, recent past, current problems. An expert should be recruited for the territory to work in a sector requiring long term expertise; this may be, for example, law, government, agriculture or industry.

2. The best road to proficiency is to assign a recruit as a junior in the territory and require him or her to pass examinations before confirming the appointment. He might then be assigned as a junior officer in the national section in Brussels. He should have learned enough in the field to support the field officers, rather than to frustrate and hector them as is too often the case now. This experience should lead to the important job of acting as a senior adviser in the field in his area of competence; in turn this could lead the officer back to a senior job in Brussels and to the role of the representative in a country. Senior representatives will have learned a lot about their territory and its needs and should work very closely with the national coordinators in the local government; learning will be a two-way process. In this way it is likely that aid programmes will become more practical.

3. The present staff should be evaluated. Those with the right attitude should receive general and specific training in the conditions and needs of the country with whose affairs they are to work. The opportunity should be taken to release unsatisfactory personnel.

The Commission should immediately discuss with the specialists on the territories and their problems who are to be found in NATO, national Ministries of Defence, Employment, Foreign Affairs and with non-government organisations such as specialist research centres in member countries of the North Atlantic Cooperation Council, NATO and EU. Other sources will be the university centres of languages which have always provided education in general culture as well as in languages. It has always been the practice to send military, civil service and commercial personnel from western Europe to study abroad in universities etc in fSU. This is still the case. From their ranks will come courses, seminars and tutors for TACIS and PHARE personnel. It is an astonishing lacuna that these actions have not been the rule to date. Access to continuing education and training is the rule elsewhere; it should be the rule within the Commission.

4. The Commission should reconsider its extensive use of consultants. The present system is unsatisfactory from every aspect. Advisers, to be successful, must have had previous personal responsibility for the kind of work required. Some I have met fulfil this requirement, including people invited by the consulting groups from several EU countries; many however have merely been consultants and command little respect in the territories. A better and cheaper policy is to invite volunteers seconded from similar jobs at home, perhaps paid by their organisations. This is the case, for example, in the British Employment Service, with the British MOD Resettlement Service and with the American Bar Association. A more extensive use of retirees as volunteers should be sought. Experience, however, suggests that their home organisation must in some cases become more professional. Such people are invaluable because they can demonstrate quickly their expertise in doing similar jobs, facing similar problems, solving them in a practical way. It is, however, essential for such people to have had some basic

briefing in the attitudes and circumstances of their hosts. Furthermore the volunteers are likely to be middle aged; some territories respect age and experience and prefer such older advisers. People with that background and with the right attitude, who clearly demonstrate a sympathy and a wish to help, very quickly create a personal rapport with their counterparts.

5. Specific experience in restructuring the military industries shows that the best approach is to take matters in stages. A short visit from an experienced industrialist to a factory suffices to establish the most likely way forward. It is now clear that is unlikely that such factories will be able to evolve their products to compete with western goods. However much the policy is unpalatable to some locals, it is found that the best way for the them to earn a living quickly is to interest a foreign company in working with them. One possibility is to start by assembling western products for re-export to the west. This will be in competition with the countries of the Pacific Rim, where much such work is done on behalf of leading Japanese and western firms with well known products. Another opportunity is for a western firm to supervise the manufacture and servicing of their products locally for sale in the fSU. This is possible, particularly where such products are already sold from import. The job of the consultant is to act as a "marriage broker" to find suitable western partners who will then, in their own self-interest, provide the "soft" technology, the management skills that the EU currently expects consultants to provide. Sadly there are few examples of successful restructuring as a result of mere consultancy. The redefined role of consultants must be to enable the recipient factory to be competent to do its own market intelligence work. This is essential, rather than having the Government to provide this role centrally.

Later it will be necessary to develop links between industry, agriculture etc with educational and research establishments in order to be able to develop new products and production processes, management etc. This, incidently, is the purpose of the second phase of a project that is being recommended to TACIS for Belarus. If done well and received positively it will serve as an example for others to consider. This new policy would drastically reduce the cost to the EU and is far more likely to succeed.

6. Essential to the TACIS and PHARE programmes is the provision of effective, objective, professional evaluation. If the recommendations above are put in place it is likely to improve the aim and thrust of projects. They should be subjected, before final approval, to independent expert evaluation as well as by local and Brussels-based personnel. The programmes should contain specific review stages which provide additional opportunities to change direction or to close projects which are deemed to be unsatisfactory. The culture of spending money for its own sake must be brought to a stop. There is no shame in admitting error or indeed failure, provided that the lessons are learned.

7. In addition to the present system of sanction by the National Governments, it would be valuable to add a body of territorial and sectoral experts to supervise the strategy and framework programmes intended and running under the aegis of TACIS and PHARE. These experts could be provided by the national governments and by other specialist groups. These could be invited on a case by case basis.

8. On present evidence, it appears that the Court of Auditors should, with advantage, be strengthened by the addition of specialists on the territories and

their sectoral requirements. These should be from professions additional to finance and economics.

APPENDIX

Some more examples to illustrate the poverty of projects and approach both in Brussels and in the territory.

- The first project to study the restructuring of the Belarus MIC inter alia required the consultants to detail the financial data such as profit and loss accounts and balance sheets. This demonstrates total ignorance of the management systems of the fSU which has no basic data to allow such financial presentations.

- A senior TACIS officer wrote in the official journal that he would "lose his temper when he heard criticisms of TACIS programmes". Another person slandered me when I wrote arguments, later upheld by his seniors, against his pet and expensive ideas of launching massive programmes to support privatisation of the giant factories without previous preparation. Such irrational responses need restraint.

- In Belarus a project was dreamed up within the Government to monitor pollution. It required different sensors to be placed over the territory of the Republic to send back data to a central station. It would have cost billions and to no purpose since there is no Law to allow inspection of sources of pollution and to require their modification or closure. The right way is to provide such a law, to train a corps of Environmental Safety Engineers, who would advise on cleaning up the pollution sources and to require the management of the organisation causing pollution to act accordingly. This would be far cheaper and also effective.

- Again in Belarus there is a TACIS programme, costing 3 million ECU, carried out by really competent experts from the British Government's Energy Efficiency Service. They audited some factories but no one would take their advice, some of which required management with no expenditure, simply because they did not care to save energy with energy prices so low. However they were not low: they represented 42-47% of the costs of industrial production. The truth is no one cares about costs in fSU. The British set up an efficiency advisory centre similar to that available to industry in UK. I doubt anyone will bother to use their advice. The British Director in Minsk told me that they intend to instrument and fit out an apartment building to show how much energy could be saved. However energy prices to housing are heavily subsidised and there seems to be no reason why anyone will bother any more than did the industrialists. The Belarus authorities have spent a lot of money on setting up Energy Police instead of saving electricity in practical ways. This is a policy typical of Peter the Great.

I suggested that the project seemed doomed to fail and that the expenditure was not worthwhile. There are two logical paths, one to tell the Belarus authorities to play their part in providing financial incentives and penalties or, two, to terminate the contract. It was deemed worthwhile since it was gradually persuading people to the right policies. However 3 million ECU is an awful lot to spend on changing the opinion of a few people in one Republic on a simple matter like energy saving. That

sum of money would fund for several years the all-important NATO Outreach Programme of changing the policies and relationships of the civilian and military authorities across every country in C&E Europe.

- An excellent British agricultural firm leased 70 Ha from a Ukrainian collective farm, In two seasons it raised the output/ha by 2.7 times by using British seed, husbandry and modifying Soviet equipment. The Minister of Agriculture was delighted and asked them to continue on 7 more farms; a good example of creating a model of excellence for others to copy. However the work came to nothing because the previous cooperative Director of the farm was replaced by a former tractor driver who stopped it. Shades of Stalinism!

- In Belarus a big factory paid 18 million DM for a licence from Neoplan, a well known German manufacturer of coaches. The factory successfully made and sold 15 coaches. The money for them, however, went into the accounts of the main firm and the project was starved of funds to buy the materials for the next order. An example of arbitrary and suicidal decisions.

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