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THE SHAPE, SCOPE AND CONSEQUENCES OF
INFORMATION TECHNOLOGIES IN THE SOVIET UNION

BY

DAVID A. COOPER, B.A.

A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfilment of
the requirements for the degree of
Master of Arts

Institute of Central/East European and Russian-Area Studies

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Ottawa, Ontario
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THE SHAPE, SCOPE AND CONSEQUENCES OF
INFORMATION TECHNOLOGIES IN THE SOVIET UNION

BY

DAVID A. COOPER, B.A. Honours

in partial fulfilment of
the requirements for the degree of
Master of Arts

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January 23, 1994

ABSTRACT

This thesis examines the role of information technologies within the USSR up until 1990. The thesis is divided into five chapters that discuss; (i) Soviet theoretical thought regarding information technologies; (ii) Soviet government policies; (iii) the quantitative and qualitative levels of information technologies within the USSR; (iv) the social-political impact of information technologies upon Soviet society. The fifth chapter is a case study that surveys (using the topics of the previous four chapters as its basis) the video cassette recorder in Soviet Union. The thesis demonstrates that information technologies played a formidable and a crucial role in the changes that occurred during the Gorbachev era and times preceding Gorbachev's ascension to General Secretary.

ACKNOWLEDGMENTS

It is unfortunate that acknowledgments are usually the least read portion of any book or paper since it is there that the writer often expresses his most profound thoughts. In my case, these thoughts are one of thanks to the many friends and relatives that helped me through this endeavour. I wish to especially thank my house-mate Doug Milne for making me feel guilty every time I took one of my many breaks. I also wish to thank my supervisor Gennady Orzonoy who put up with my disappearing acts when work was supposed to be due. Finally, much credit has to go to Melissa Mech for her fine editing, and giving me the decisive push to finish finally this enterprise.

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INTRODUCTION

The rapid development of information technologies in the Soviet Union during the late 1970s and early 1980s opened up a proverbial 'pandora's box' of problems for the Soviet Union. First and foremost, it revealed that the Soviet development model was incompatible with many of the basic social, economic and political requirements of the impending information age. Once this became increasingly understood by Soviet leaders, it had profound policy repercussions for the USSR, and was instrumental in precipitating the fundamental changes that have occurred in Soviet Union.

The 'information revolution'¹ is a global phenomenon that is generating profound social-economic and political transformations. Information technologies and communication and computing technologies (C&C) are a driving force of societal reorientation in the 20th century. Similar to the changes provoked by the development of the internal combustion engine and the mechanical printing press in the early 1900s, information technologies are reshaping contemporary society.

Information performs an important social function in modern society, it enhances the creative activity of citizens.

Information ensures^{the} validity of decisions at all levels of

¹ The information revolution is generally referred to in the Soviet Union as the 'Scientific-Technological Revolution' (STR), or 'Nauchno-Tekhnicheskaya-Revoliutsiia' (NTR).

the economy, it accelerates the development of society and, lastly, it helps to raise people's standards of living.

To begin, it is necessary to introduce three crucial points: first, a basic knowledge concerning information and communication technologies, in particular their capabilities and potential; second, some of the basic tenets and ingredients of the information revolution; and finally, an understanding of the importance and relationship of information technologies to the Soviet Union.

Today in the West, information technologies are taken as a basic and ubiquitous tool of daily existence. The microchip, the core element of information or computing technology, finds its use everywhere--from banking machines to toaster ovens, and practically any other electronic or electro-mechanical device. Microchips have given mundane tools and machines the ability to perform complex functions, therefore alleviating often boring and redundant tasks, or unsafe work procedures.

Beyond basic domestic and industrial applications, the prime function of information technologies is their ability to gather, analyze, process, store, and disseminate information. The computer performs these functions in a fraction of the time required by human effort. As a result of the computer and other information technologies, there has been a massive proliferation of information, much of which is held in government or private data banks. Nevertheless, a significant quantity of information

on virtually any subject may be quickly accessed by the public through public data bases and software.

Accompanying the proliferation of information technologies has been a sizable expansion in the field of telecommunications. This development enables computers located around the globe to communicate with one another. Information that in the past took five days to reach its destination, now takes five seconds via a facsimile machine or a modem. Moreover, the amount of information that can be transmitted along fibre optic lines (as opposed to the old copper lines) can be likened to the difference in traffic capacity on a highway versus a dirt road. Such telecommunication capability has fundamentally altered the substance and quantification of global communications.

Information technologies have transformed our daily lives. They have reduced the amount of time it takes to perform many mundane chores such as banking and grocery shopping. The concept of a 'cashless' society in which financial transactions are made electronically is already at hand. Information technologies have also put volumes of information instantly at our fingertips.

Information technologies have also altered the way we visualize the world. It is now possible to view instantaneously news events from around the world. An indication of this change was the 'real-time' television coverage of the Gulf War and the attack on Russia's parliament building carried by CNN. Marshall McLuhan's idea of a 'global village' is more a reality today than ever before.

On a more profound level, information technologies have released new societal forces equal in scope to those unleashed with the advent of the printing press. The printing press shaped the forces that led to the birth of the modern state by facilitating the widespread distribution of information and civic knowledge. This consequently allowed the average citizen to affect and involve themselves upon the polity and society. Information technologies have the potential to transform radically the way in which we participate in society and how we inter-relate with one another, both locally and globally. While the true implications of the information revolution are not precisely known, at the very least the information revolution will substantially increase human intellectual activity and change inter alia global discourse, both qualitatively and quantitatively.

There are also many dangers that could potentially arise with the growth of information technologies. The issue of privacy is a most prominent concern. Information regarding all aspects of our personal lives--including education, medical, financial, and employment--is stored in data banks that can be cross-referenced easily via the telephone. The potential for unscrupulous use of this information by the private sector or government remains high. Governments could potentially utilize the massive amount of information in their data banks to infringe the privacy of their citizens. Private companies already use information obtained

(sometimes even from the government) to target specific consumers.

In the economic sphere, information technologies have fundamentally transformed the way companies design, manage, manufacture, and market their goods and services. New manufacturing techniques such as computer-aided design (CAD), computer-aided manufacturing (CAM), and just-in-time-production are based entirely on communication and information technologies. As global economic integration becomes the norm, multi-nationals require the ability to transmit instantly and to process and retransmit data from around the world.

The growth of information technologies is unevenly distributed amongst nations. The Western industrial nations are the most advanced, followed by the Soviet Union and the East bloc countries. The epicentre of the information revolution is the United States, which quarters the vast majority of world data banks. The information infrastructure of a given country generally mirrors its level of economic development. The disparity in progress between countries is affected by such factors as national wealth, and national political-culture.

In the West, the information revolution is considerably more advanced than in the Soviet Union. The ongoing reduction in the consumer prices of inexpensive yet increasingly powerful information technologies has made them widely available to the public. This momentous improvement in the cost-performance ratio of information technologies is due to large production runs, low

cost clones, overseas production, and increased competition amongst manufacturers.

INFORMATION TECHNOLOGIES AND THE SOVIET UNION

The Soviet Union was a major user and manufacturer of information technologies. The Soviets utilized information technologies in many of the same ways as the West. Information technologies were used in factories for production and management and in offices for data processing. Soviet utilization differed, however, in many other ways. Information technologies had not become the pervasive tool that they were in the West. There were no bank machines or automated checkouts, and very few homes possessed any of the newest information technologies such as the video cassette recorder (VCR), personal computers (PC) and facsimile machines (fax).

Information technologies held many practical needs particular to the USSR. For Soviet economic planners, information technologies were viewed as a necessity and a solution to the growing complexity of the tasks of central planning. The state security apparatus--the KGB and MVD--viewed information technologies both with suspicion and with enthusiasm. While information technologies used surreptitiously undermined state control, they also had the potential to improve that same control. In the military realm, information technologies became an increasingly decisive factor on the modern battlefield.

Unlike the West, the Soviet Union had a political and economic system that was fundamentally incompatible with the basic characteristics of an information society. An information society is by definition an open society. The USSR, however, had a strong history of suppressing non-state sources of information. In this regard, the Soviets attempted to control and monitor all means of information generation, transmission and dissemination. One of the primary repercussions of Soviet information control was the stifling of the social-political, scientific-technological and economic spheres of society.

As information technologies became more pervasive throughout Soviet society, they eroded the hitherto state monopoly over computer and communication technologies. Unlike the Orwellian nightmare, in which new technologies would enslave the masses, information technologies had done just the opposite in the USSR. New communication technologies provided new non-state alternatives or avenues of information for the Soviet citizen, and created a public sphere of discussion that is free of the state.

Technological 'backwardness' and attempts to 'catch-up' to the West have been a major theme running throughout of Russian/Soviet history. The greatest modernizer of Russian history was Peter the Great. It was not without some veracity that Gorbachev was compared to Peter. Both leaders understood that the fundamental strength of a nation was not its military, but rather the technological level of its industrial and human

base. Military power cannot be achieved without having a technological and human base on which to build and support an army.

INTENT

The basic aim of this paper is to examine the social-political impact of information technologies upon Soviet society. These technologies have affected all areas of Soviet society in a myriad of ways. Perhaps the most important effect has been the erosion of Soviet control over information, which was brought about by the proliferation of sanctioned and non-sanctioned information technologies (e.g., facsimile machine, video cassette recorders and personal computer).

The first chapter of this thesis surveys Western and Soviet theoretical literature regarding information technologies and the information revolution. There were many theoretical differences between the Soviet and Western concepts of an information revolution and society. These were largely based on their contrasting ideological perspectives Marxist-Leninist versus free market.

Over the course of the last decade, Soviet thought on this subject changed fundamentally. One reason for this change had been the elemental direction that information technologies had taken in their development. Information technologies evolved from large cumbersome machines employed solely by large institutions (e.g., governments, large enterprises, and universities) into

personal items that could be owned by almost any individual. A second reason for the change in Soviet thinking was due largely to the policies of *glasnost*, which allowed theoreticians to deviate from the strict parameters previously set by Marxist-Leninist orthodoxy.

Chapter two surveys past Soviet policies concerning information technologies. This chapter examines Soviet efforts to both utilize and expand information technologies while simultaneously attempting to minimize Soviet society's access to these same technologies. This 'balancing act' was inherent in Soviet official policy towards information technologies. This chapter will demonstrate that the Soviets obtained mixed results in their attempts to prevent the proliferation of non-sanctioned information technologies and to control access to them.

The third chapter will outline the level of information technologies within the Soviet Union as of 1990. Here, the prime objective is to provide a broad picture of the saturation of information technologies. The importance of examining quantitative levels of information technologies was that their measure of influence corresponded to their level of distribution within society. The focus is on the new personal technologies (i.e., fax, VCR,) and the main large information technologies (television, telephone). These technologies were instrumental in producing fundamental changes in Soviet society, which led to its evolution from a strictly vertical society to one in which both horizontal and multi-directional links were becoming the norm.

Chap-ter four examines the effects of information technologies on the Soviet polity and society. Two central questions will be examined. The first question deals with the power relationship that is derived by those with access to information technologies and therefore to information. In the past, the Soviet government and the Communist Part of the Soviet Union (CPSU) held a monopoly on information technologies, which in effect helped them to maintain power. The expansion of information technologies undermined the monopoly with important consequences.

A second question asks the well-known question, "do information technologies control or inform?" Specifically, did information technologies facilitate greater social-political control or inversely, did they facilitate political emancipation through greater access to information. Ultimately, the focus is on whether information technologies undermined what the Communist Party and the Soviet state sought to achieve during seventy years prior to 1990.

The final chapter is a case study that examines how the video cassette recorder penetrated, proliferated and has effected Soviet society. The VCR was chosen because it was a relatively new information technology. In addition, issues related to the proliferation of VCRs received a great deal of attention within the Soviet press. This example also demonstrates the difficulties experienced by Soviet authorities in controlling a new

information technology as well as the irreversibility of the changes that took place in the Soviet Union.

The central hypothesis of this thesis is that information technologies were an integral factor regarding the changes that occurred in the Soviet Union. Information technologies and the functioning of an information society proved to be incompatible with the Soviet political-economic model. Furthermore, the changes that occurred in the USSR were determined by the very nature of information technologies themselves.

In the social-political realm, information technologies, among many other reasons, emancipated Soviet civil society by dramatically increasing domestic and international sources of information. This development marked an important break from the past. For the first time in Russian/Soviet history there were alternatives to the state monopoly over information, culture and ideology. In addition, information technologies promoted social individualization, thereby diminishing the collective psychology and values propagated by the Soviet state.

The time focus of this essay is approximately 1980-1990. It was during this period that there was a substantial proliferation in information technologies. It was Gorbachev's policies of *glasnost* and *perestroika* that facilitated the growth of information technologies. Ironically, Gorbachev's policies were a result of information technologies. Periods preceding the 1980s will be discussed in Chapter two in order to trace the evolution of Soviet policies and historical trends.

The theoretical framework of this essay is based on the school of thought called "technological determinism." This theory holds that a particular technology has a certain "inner logic or dynamic" that predetermines a definite social consequence regardless of the setting. Once a decision is made in favour of a certain technology, the pattern of social consequences is set, whether in a capitalist or communist system.²

There is, however, a serious deficiency in this theory as it disregards the influence of society and culture upon technology. For example, the types of goods produced and the methods and reasons why they were conceived are often an outcome of societal desires. The facsimile machine is an example this deficiency. While nobody demanded the invention of the fax machine *per se*, it was, however, a by-product of society's desire for the ability to transmit data quickly and efficiently. A counter-argument may be that consumer demand is the product of advertising and marketing. To a certain degree, this is probably true for some particular types of brands or products. However, the fundamental and underlying reason for the product is a societal demand.

The Soviets, for their part, had a tendency to copy Western information technologies. This ultimately shaped the impact of information technologies in a fashion similar to that of the West. The Soviets have, at times, created variants of Western information technologies which were more suitable to the

² For a complete examination of these two theories see Frederic J. Fluron, *Technology and Communist Culture*, (New York: Praeger Publishers, 1977), pp. 457-459.

authoritarian model, but in almost all cases, the Soviets subsequently abandoned these technologies.

CHAPTER ONE

SOVIET THEORY

CONCERNING INFORMATION TECHNOLOGIES

In an attempt to discern the impact information technologies have had on Soviet society it is instructive to first understand how the Soviets themselves viewed this phenomenon. Soviet theoretical approaches towards information technologies have enjoyed a long tradition. Consequently, a rich body of theoretical literature, dating back to the sixties, exists concerning the relationship of information technologies and society.

However, the rapid pace and unexpected growth of new modern and personal information technologies rendered much of this material obsolete (this is also true of much of the Western literature on this same topic). Erik Hoffmann's (1977) study which focuses on the impact of information technologies upon Soviet society views information technologies solely as existing within the purview of the State. The possession of information technologies by individuals or NGOs is not at all addressed.¹ However, the authors of these approaches should not be faulted as few could have possibly foreseen the speed with which personal

¹ For a survey of Soviet theoretical literature on the STR see Erik Hoffmann's two articles, "Technology, Values, and Political Power in the Soviet Union: Do Computers Matter?" in *Technology and Communist Culture*, F. Fleron ed. (New York: Praeger Pub., 1977), pp. 397-436 and "Soviet Views of the 'Scientific Technological-Revolution'" *World Politics* (1978), pp. 614-644.

information technologies would proliferate throughout society, both in the West and the East.

By the early 1980s, astute Soviet observers of Western informatics had begun to speculate about the true nature of the information revolution and its technological component. They began to note a shift of 'new' information technologies (i.e., personal computers, modems, video cassette recorders) out of the workplace and into the home, and they began to theorize about the consequences of this movement, both in the West and back home. This chapter will focus on these scholars' ideas and thoughts.

To begin, however, it is important to examine briefly early Soviet IT theory, and the legacy Marxism-Leninism has left on this literature. Finally, it should be noted that discussions of information technologies before the late 1970s and early 1980s were reflective and based on the technologies of that time (i.e., large computer systems,, which today have been rendered obsolete.

The Legacy of Marxism-Leninism

Karl Marx and Frederick Engels wrote little on the topic of information technologies or mass communication. Much of what they did write concerning this question was *ad hoc* and meant to address immediate problems.² Nevertheless, a great deal can be deduced from writings which indirectly touch upon these topics.

Marx wrote extensively about the 'unity of the polity', and

² Dusan Havlicek, *Public Information in Soviet Systems*, Study no. 9, (Köln: Index, 1985), p. 9.

the distinction between 'right' and 'wrong' positions. His conceptualization of a communist state necessitated a 'communist press': that would serve as the sole medium of communication for the people, simultaneously serving to direct policy and interpret and re-enforce communist doctrine. There was little, if no room for an autonomous 'free' press or alternative means to disseminate independent ideas or opinions.³

Marx's justification for party ownership of information technologies was based on the premise that the views of the working class could not receive full access or fair representation within any of the channels of communication that were independently owned by members of the capitalist classes. Consequently, the means of communication had to be owned by the whole of society for the benefit of society.⁴

Lenin view's on the media and mass communication did not originate from a comprehensive theoretical concept of public communication under socialism. Rather Lenin tended to focus on communication policy and not on the theory of communication.⁵ However, like Marx and Engels, certain ideas can be gleaned from other writings. One of Lenin's basic tenets of the communist state was "the centralisation of the means of communication and

³ Fred S. Seibert et al., *Four theories of the Press* (Chicago: University of Illinois Press, 1956), pp. 110-111.

⁴ Ibid.

⁵ Havelicek, p. 9

transport in the hands of the State."⁶ Prior to the revolution, Lenin, like Marx, understood that the ideals of communism could not prevail when the means of disseminating information were left in the hands of the bourgeoisie.⁷ Therefore, in order to have a truly 'free' press, it was essential for the proletariat to seize total control over the mediums of communication.

But according to Lenin's notion of 'class consciousness,' workers had neither sufficient detachment nor the perspective required to develop more than a narrow 'trade-unionist consciousness'. Therefore, it was up to 'the vanguard of the proletariat'--the Party--to control both the messages transmitted from the press, and the material facilities of communication.⁸ In his article "The Party Organization and Party Literature," published in 1905, Lenin declares that "against bourgeois morality, bourgeois entrepreneurial and shopkeeper-ruled press ...the socialist proletariat must establish the principle of a Party literature, develop the principle and translate it into reality in the most complete and comprehensive form."⁹

As a result of Lenin's and Marx's ideas, information technologies were subsequently viewed as necessary instruments of

⁶ Ibid., p. 59.

⁷ S. Frederick Starr "New Communication Technologies" in Loren Graham ed., *Science and Soviet Social Order* (Cambridge: Harvard University Press, 1990), pp. 26-27.

⁸ Ibid.

⁹ V.I. Lenin, "The Party Organization and Party Literature." Quoted in Havlicek, p. 9.

state power that were to remain within the strict control of the Party.¹⁰ The Bolsheviks maintained that information technologies should be the means whereby knowledge could be unified within the state, ideas of communism and the Party could be propagated, and strict control over the populace could be maintained.¹¹ Under Stalin, this doctrine when put into practice was taken to the extreme due to his fevered paranoia over the activities of the 'ubiquitous spy' and 'imperialist encirclement'.

In recent years, Marxist materialist philosophy has indirectly had negative repercussions for some of the new information technology products such as software.¹² As a commodity, software did not display the normal 'value' characteristics used by Soviet planners at Gosplan for calculating prices. N.V. Gorshkov, Chairman of the State Committee on Computers and Informatics writes:

Even the term 'software product' brings forth stormy protest from many economists and planners. How is it possible, they say, to consider something a product

¹⁰ Since the information technologies in the early Soviet state consisted mainly of telegraph, film and press facilities, it was largely Marx's and Lenin's theories concerning these forms of mass communication that shaped subsequent Soviet thought concerning information technologies.

¹¹ Siebert et al., pp. 120-125.

¹² For a discussion of Marxist theories of material value see Alex Nove, *The Soviet Economic System*, 3 ed. (Boston: Unwin Hyman, 1977), pp. 347-357.

which is written on paper and is impossible to measure by the kilogram, kilometre or litre.¹³

This problem has had a concrete and deleterious impact on the Soviet software industry and on other industries involved in the development and sale of various intellectual-property goods (see CHAPTER THREE).

FROM KHRUSHCHEV-CHERNENKO

In the early 1960s, Soviet theorists began to develop the idea of the 'scientific-technological-revolution' (*nauchno-tekhnicheskaiia-revoliutsiia*) to describe the future evolution of communism and capitalism based on technological and scientific advancements.¹⁴ Soviet analysts viewed the information revolution as a universal process characteristic of maturing economies. An authoritative Soviet definition of the STR, states:

The Scientific-technological revolution is a radical (*korennoe*) transformation of science and technique, of their connections and social functions, leading to a universal revolution (*perevorotu*) in the structure and dynamics of the productive forces in the sense of a change in the role of man in the system of productive forces on the basis of comprehensive technological application of science as a direct productive force,

¹³ D. Gorshkov, et al. "Personal'nyi radioliubitel'skii komp'iuter 'Radio-68PK'" *Radio* (1988), Nos. 1-8. Quoted in Richard Judy and Virginia Clough, *The information Age and Soviet Society*, (Indianapolis: Hudson Institute, 1989). 6.

¹⁴ While STR theorists share a basic viewpoint about the STR, divergent viewpoints, nonetheless exist. For the most comprehensive survey of Soviet STR literature in English see Erik Hoffmann, "Soviet Views of the 'Scientific-Technological Revolution'" *World Politics* Vol. 30 no. 4 (July 1978), pp. 615-644.

penetrating all components of production and remoulding the physical conditions of human life.¹⁵

It is noteworthy that this definition considers the STR as essentially a transformation of the scientific-technical and human 'productive forces' of society. It does not discuss social-political consequences of the revolution in either the social sphere (e.g., class relations, authority) or the societal superstructure (e.g., institutions, laws).¹⁶

Despite the predominance of themes dealing with production, several themes emerge from STR literature which related to information technologies and society. According to theorists, the introduction of information technologies into the socialist milieu "would enhance the cultural and educational spheres, reduce the differences between urban and rural life and between intellectual and physical labour, and promote common social values and a coherent and shared world view."¹⁷ Furthermore, information technologies would substantially broaden 'socialist democracy'. These studies, however, did not elaborate on how these goals would be achieved realistically since most posit utopian conceptions dependent on technologies that as yet did not exist.

¹⁵ *Chelovek-nauka-tekhinika* (Moscow: Polizidat, 1973), p. 352. Quoted in Erik P. Hoffmann, "Soviet Views of the 'Scientific-Technological Revolution,'" *World Politics* (July 1978), p. 617.

¹⁶ Erik Hoffmann and Robin Laird, *The politics of Economic Modernization in the Soviet Union*, (Ithaca: Cornell Univ. Press, (1982), p. 61.

¹⁷ *Ibid.*, p. 65.

Soviet studies on the STR, were diverse and showed a degree of ideological innovation and cognitive reorientation. Nevertheless, they were deeply rooted in conservative Marxist analysis and did not overtly challenge basic Marxist principles. Moreover, they often attempted to re-affirm that the Soviet Union was on the correct course of social-economic development, and they clearly professed the supremacy of the Soviet system over capitalism in the evolution towards an information society.

One of the short-term goals proposed by the technical intelligentsia towards fulfilment of the STR was the creation of a 'State System of Computer Centres' (GSVT). This system was to be modelled after the pyramidical hieratical system of the Soviet State and was to be fully oriented towards the streamlining of economic management. This system was to be set-up so that each factory, enterprise or economic unit would have a computer. These computers would be tied into one another at the *oblast* level. All computers at the *oblast* level would be tied into a republican level computer system culminating in a giant supercomputer based at Gosplan itself.¹⁸

This revision of a giant network of computers, however, was little more than a fantasy having been conceived primarily by mathematical and social theoreticians who did not have a background in computing applications. Quite simply the technology did not exist. The plan was never taken seriously by top

¹⁸ Judy, pp. 7-8.

political and economic leaders, and was eventually disregarded.¹⁹

AVTOMATIZATSIIA VS. INFORMATIZATSIIA

The view of computers and information technologies as 'number-crunchers' and as tools of automation continued into the 1970s-1980s. Within Soviet theoretical literature an intensive philosophical debate existed concerning the role of information technologies in society. The debate was centred around two diametrically opposed views about the development of a Soviet information society and the role of information technologies within that society. On one side of the argument were proponents who favoured 'avtomatizatsiia' (automation) whereas on the other side were those that favoured 'informatizatsiia' (informatization).

Proponents of avtomatizatsiia believed that the role of computers should be limited to automation within the sphere of the workplace. In late 1958, the State Committee on Science and Technology, Gosplan, and the Academy of Science devised a plan for microprocessors in Soviet society. In their plan computers would have three functions: (i), controller of machinery and robotics; (ii), for Computer-aided-design and computer-aided-manufacturing (CAD/CAM); (iii), as a research and educational

¹⁹ A. Ershov, "Information Science: From Computer Literacy of School Children to Information Standard in Society," *Kommunist* (15 January, 1987). Translated in *JPRS-UKO-88-007* (4 April, 1988), p. 60.

tool. There was no mention of the role of computers as personal computing devices.²⁰

This position was politically expedient for conservatives who feared the potential destabilizing effects of the widespread introduction of information technologies into society. The concept of automation promoted the values of discipline and order, which were consistent with traditional Soviet values.²¹ Conservatives also foresaw the potential role information technologies might have in effectively eroding the State's information monopoly. There were strong fears that information technologies would facilitate the penetration of Western information into the Soviet Union. Vladimir Vinogradov writing on the dangers of trans-national transfers of information states:

The present state of mass communications in the non-socialist world is characterized by the dominance of the leading capitalist countries both in the determination of the ideological content of information and in the allocation of technical and financial resources...Imperialism exploits its dominant position in the sphere of mass communications in the non-socialist world in an attempt to foist its ideology, its concepts, and its evaluation of situations on the planet and on its individual regions and countries.²²

²⁰ Judy, p. 8

²¹ For an in depth study on the debate between those that favoured the opposing paradigms of automation and informatization paradigm see the chapter in Erik Hoffmann and Robin Laird's book *The Politics of Economic Modernization*, (Ithaca: Cornell Univ. Press, 1982), titled "the Conflict between Conservatives and Modernizers," pp. 74-81.

²² Vladimir A. Vinogradov, "Informatsiia i global'nye problemy sovremennosti", (Information and Global Problems of Modern Times)," *Voprosy Filosofii*, no. 12 (1983). Translated in *Soviet Review* Vol. 25, no. 4 (Winter 1984-1985), p. 26.

Hence, for conservatives, it was imperative to limit the means by which Soviet citizens could access the 'imperialist mass media'.

In the economic sphere, proponents of automation concluded that information technologies would stabilize the existing economic and administrative system. Automation was a particularly attractive idea to the political elite since it would continue to preserve their and the party's monopoly over information and information technologies. Accordingly, the automation concept sought modernization in a goal-oriented fashion (within limited parameters) that would essentially preserve the social-political status quo.²³ Automation which confined access to information technologies within the limits of the workplace was an ideal vision for the future.

At the other end of the spectrum, proponents of informatization argued that the Soviet Union should follow the Western model which emphasised the growing significance of information within society. A definition of informatization provided by Dr. D. Gvishiani, Dr. G. Smolyan and Dr. D. Chereskin in the CPSU's theoretical journal *Kommunist* reads:

Informatization means the development and utilization of technologies, computer facilities, and systems for data communication and transmission, ensuring the full and prompt utilization of information and knowledge in various areas of human activities.²⁴

²³ Judy, pp. 20-21.

²⁴ Dzhermen Gvishiani, Georgy Smolyan and Dmitriy Chereskin, "Social Aspects of Informatization," *Kommunist* No. 10 (1990). Translated in JPRS-UKO-90-013 (28 September, 1990), p. 31.

The essential concept of informatization, in line with Western theorists, is the recognition of information as the prime resource of the future. Another theorist writing in 1983 on the importance of information notes:

The network of information communications is, in a manner of speaking, society's nervous system. In recent decades the information factor has produced one of the most profound changes in the entire history of human civilization: it has transformed the world into a unified information system that functions in real-time.²⁵

Soviet theoreticians, like their Western counterparts, came to recognize that the 'information revolution' was not solely based on computerization but rather on a complex interplay of many types of information technologies, including data banks and telecommunications.²⁶ Two leading theorists, N.N. Moiseev and I. T. Frolov of the Academy of Sciences, write in *Kommunist*:

At any rate, not until the eighties did it become clear, first, that this revolution was associated not only with the invention of the computer but also with the entire complex of electronic equipment, including communication lines, data display equipment, various kinds of reproduction equipment, etc. Second, it also became clear that it was impossible to solve the major scientific and technological problems of modern times without sophisticated data-processing and analyzing systems...²⁷

²⁵ Vinogradov, p. 20.

²⁶ Moiseev and Frolov, "Vysokoe Soprikoosnovenie. Obshchestvo chelovek i priroda v vek mikroelektroniki, informatiki i biotekhnologii, (A High Level of Interfacing: Society, Man, and Nature in the Age of Microelectronics, Information Science, and Biotechnology," *Voprosy Filosofii*, no. 9 (1984). Translated in *Soviet Review*, Vo. 26, no. 3 (Fall 1985), p. 45.

²⁷ Ibid.

Ideas, such as those above, showed a growing sophistication in understanding the true nature of information technologies.

To some degree, these Soviet proponents of informatization fell into the same academic stream as Western information society theorists. However, Soviet theorists differed from their Western counterparts in many important aspects as their vision remained within the Socialist paradigm. For example, Soviet theory contained a strong element of socialist management and planning that was not largely apparent in Western literature. Moiseev and Frolov state:

Thus we see that the development of microelectronics has logically led to a new stage in the scientific and technological revolution at a time when human civilization has entered an age of robots and information sciences that transform the production sphere and the entire life of modern man...Socialist society fully evaluates the revolutionary potential and social consequences of microelectronics, information sciences, and biotechnology. It opens up broad opportunities for such applications and, at the same time, in its very essence corresponds most fully to this new technology, which requires that vast social capital rather than private capital--even if it may exceed the material resources of socialism for a period of time--be brought into play (on a planned basis). The socialist structure makes it possible to use the basic potential of the newest technology--its labour-saving character--to the fullest.²⁸

The authors also claimed that the Socialist system would be better suited to deal with the social repercussions of the information revolution. For example, they argued, that socialism would be better able to deal with job displacement, which they

²⁸ Ibid., pp. 49-56.

foresee as an inevitable social consequence of the information age.²⁹

Amongst Soviet proponents of informatization, information and information technologies were still seen as instruments of controlling, organizing and forecasting developments in society and for improving social management.³⁰ Western theorists like Daniel Bell too.. an opposite position, arguing that information technologies would strengthen the role of the individual and allow for greater participation in governing.³¹

Soviet theorist also foresaw dangers inherent in the widespread proliferation of information technologies. They specifically expressed alarm over the dominance and monopoly of certain groups over information technologies. Moiseev and Frolov write:

But like any technical innovation, telecommunications entails not only new potentialities but new dangers as well. Although it possesses enormous creative informational force, it can also act as a destabilizing factor: it all depends on who controls telecommunications.³²

Their main fear was directed at the West's military-industrial complex and its 'aggressive goals.'

²⁹ Ibid., p. 53.

³⁰ Vinogradov, p. 19.

³¹ For an abbreviated interpretation of the ideas of Daniel Bell and other leading Western futurologists see Joseph F. Coates and Jennifer Jarratt, *What Futurists Believe* (New York: Lomond, 1999).

³² Moiseev, p. 49.

Certain proponents of informatization criticized their colleagues who sought "to reduce scientific and technological progress to industrial technology alone or confine it to its technical and economic aspects."³³ Soviet theorists also had strong criticisms for their Western colleagues, including Daniel Bell and Alvin Toffler. They argued that their studies were deficient due to 'narrow-mindedness', for their use of 'bourgeois sociology', and "for resorting to technological determinism in the search for the shortest way to understanding the problems posed by the impact of progressive technology on society."³⁴

Soviet theorists also reproached the Western theorists who viewed information technologies as a panacea for all contemporary social-economic problems.³⁵ Vinogradov, in admonishing his Western colleagues, states that "the idea of a 'non-industrial' society was conceived as a tempting solution to the cul-de-sac of 'industrialism' in the direction of some fundamentally new stage of civilization in which vices of capitalism would disappear on their accord."³⁶ Soviet theorists argued that the rapid development of information technologies under capitalism would

³³ An early proponent of this view was V.I. Kosolapov, *Mankind and the Year 2000* (Moscow: Progress Publishers, 1976), p. 21. Moiseev and Frolov express this same view in their article in *Kommunist*, p. 44.

³⁴ Vinogradov, p. 31-37.

³⁵ see Moiseev, p. 52. and Vinogradov, pp. 29-32.

³⁶ Vinogradov, p. 30.

amplify social-economic tensions within society. Vinogradov states:

The social system of bourgeois society will evidently not develop in the direction of internal integration, as advertised in the 'information society' concept, but will instead undergo further, increasingly intensive, social and class stratification. The social-economic processes entailed in the informatization of capitalist countries and, especially, the dramatic increase in the employment rate...the political destabilization of society, the erosion of traditional institutions and norms.³⁷

These problems, in the author's view, would force the political and economic elite to exercise greater control over society.

Soviet proponents of informatization have to be faulted in their often contradictory vision of the role of information and information technologies. On one hand, they viewed information technologies as instruments for promoting the harmonious development of the individual and for the mass dissemination of information. They also viewed information technologies as tools for social management, which limits the free choice of individuals. Their contradictory views were likely due to compromising what they wanted to write, with the need to pay "lip-service" to Marxist ideas.

By the early-to mid-1980s, the writings of adherents to the informatization stream of thought were becoming increasingly prevalent in serious academic journals, especially the CPSU theoretical journal *Kommunist*. Moreover, it was becoming increasingly obvious from practical Soviet and Western experience

³⁷ Ibid., pp. 31-32.

that computers and information technologies were more than just a component of 'automation'.

This broader understanding of the importance of information technologies in society can be seen in the writings of many Soviet scholars. Soviet theoreticians viewed the advent of the personal computer and concomitant improvements in telecommunications in the early 1980s as a pivotal milestone in the development of the information revolution. In their view, the rapid miniaturization of computers and the accompanying reduction in formerly prohibitive prices marked the age of personalized informatization.³⁸ The advantages and importance of personal computing were pointed out by Grigorii Rafailovich Gromov in his landmark book *National Information Resources: Problems of Industrial Exploitation*:

The potential impact of personal computing on the rate of scientific-technical progress is comparable only to that brought about by the invention of the printing press. Just as the book, the 'fountain of Knowledge,' escaped from monastic cells 'into the light of day' after the invention of the printing press, so the personal computer will bring the power of the computer and modern information processing out from behind the 'moats' of large mainframe computer centres. The computer thereby will be gradually transformed from a 'mysterious monster' with which people interact only via programmer intermediaries into a simple and familiar personal tool, accessible for everyday use at home, work, and study.³⁹

³⁸ V.S. Mikhalevich and B.N. Malinovsky, "The Problem of Creating a Standardized Series of Personal Computers," *Upravlyayushchye Sistemy i Mashiny*, No. 5 (September-October 1984), pp. 3-7.

³⁹ G. P. Gromov, "Natsional'nye informatsionnye resursy: problemy promyshlennoi ekspluatsii" (Moscow: Nauka, 1984), p. 7.

Soviet authors looked enviously towards the West. In an article on personal computers, V.S Mikhalevich and B.N. Malinovsky, discussed the positive individual applications of personal computers in the West. They state:

An analysis of the status of operations in the area of creating and using personal computers abroad confirms the high efficiency of their use and their rapid and broad dissemination in the most diverse realms of human activities that are connected with obtaining and processing information.

The economic impact from using PCs is formed by virtue of improving economic productivity in the realm of intellectual labour by means of providing each specialist with a workplace that is oriented in the best manner towards his specialized activities and with a transition to an ideal, highly efficient manufacturing method for performing administrative, research and planning operations, public services and others. In our country the potential demand for PCs is extraordinarily great and their use must yield substantial economic impact...⁴⁰

Soviet theorists became alarmed as they realized that the Soviet Union's was lagging in applying microcomputers compared to the growing pervasiveness of personal computers in the West.

NEW TIMES AND NEW UNDERSTANDINGS

As a result of the tacit recognition given by Gorbachev's policies of *glasnost*, which sought to recognize a new understanding concerning information and the need to expand its functions in Soviet society, favour shifted towards the Western model of informatization and away from the ideologies that sought to limit the freedom to information. Moreover, Gorbachev adopted

⁴⁰ Mikhalevich, pp. 3-7.

many of the proposals advocated by those in the 'informatization' camp.⁴¹

Many articles in 'serious' Soviet journals became increasingly similar in substance to those of their western counterparts in their analysis of the role of information technologies in society. The writings of the late Andrei Ershov, who was described as the Alvin Toffler of the Soviet Union, were considered to be the most influential.⁴² In his articles, Ershov sketched his vision of the Soviet information age and the means of achieving the goal of informatization. In his view, the information revolution was being pulled by the rapid proliferation of information technologies, while simultaneously being pushed by the growing number of white collar workers and the mushrooming quantity of information.⁴³

Ershov foresaw a day when "every workplace [would have] practically unlimited information and computational capabilities. The development of a comprehensive communications environment based on communication satellites and optical fibre systems [would give] information unparalleled mobility and a potential

⁴¹ Paul Josephson, "Science and Technology as Panacea In Gorbachev's Russia," in *Technology, Culture and Development: The Experience of the Soviet Model*. ed. James Scanlan, (Armonk N.Y.: M.E. Sharpe, 1992), p. 41.

⁴² Two of A. Ershov's seminal works are "Shkol'naia informatika v SSSR: ot gramotnosti k Kul'ture," *informatika i obrazovanie* no. 6 (1987), pp. 3-11. And "Informatizatsiia ot komp'iuternoi gramotnosti uchashchikhsia k informatsionnoi kul'ture obshchestva," *kommunist* no. 2 (1988), pp. 82-92.

⁴³ Ershov (1988), p. 57.

universal accessibility."⁴⁴ Every person would have such a workplace, and would have the ability to communicate with others through telecommunication networks. Small economic units, such as stores and offices would also be plugged into the network. At the top, Ershov foresaw regional supercomputers that would integrate information flows into even larger national supercomputers.

The difficulties in bringing his dream into reality were not lost on Ershov. He clearly recognised that the Soviet economy was in a dismal state with a crumbling infrastructure. Yet he argued that unless the USSR undertook policies to informatize the economy and society rapidly, the USSR would fall irreparably behind the United States and the other Western nations.⁴⁵ This concern was supported by many other Soviet theorists, many of whom made almost desperate calls to action. In his article, A.I. Rakitov, a doctor of philosophical science writes:

...[the Party] should make the problem of informatization of society the first priority in the system of social-economic preferences. It should not simply be considered one of the development trends, but a superpriority [sic] key trend, without which we will not overcome the lag, will not create a knowledge economy, will not preserve our place as a great power, will not ensure a deserved place in solving global problems and will not overcome stagnation phenomena in the economy.⁴⁶

⁴⁴ Ershov (1987), p. 58.

⁴⁵ Ibid., pp. 59-60.

⁴⁶ A.I. Rakitov, "The problem of Problems," *NTR: problemy i resheniia* Vol. 12, no. 4 (1988). Translated in *JPRS-UST-88-011*, P. 45.

To catch up to the West, Ershov asserted that the USSR had to make key policy changes. In addition to his education program to introduce computers into the secondary curriculum launched in 1985, Ershov advocated the construction of large automated plants for the production of personal computers. The microcomputers would be priced so that they would be readily affordable for all individuals. Furthermore, Ershov called for the reorganization of industrial production to meet the needs of the information age. He maintained that Soviet industry should be directed towards the production of software and other knowledge based goods.⁴⁷

Beyond the political and technical requirements that Ershov advocated, he saw the most important element as being the 'human factor'. In his opinion, the bureaucracy and the bureaucrats were a distorting factor caught between the knowledge worker and the information that these workers required to do their work. Hence, this level of the bureaucracy needed to be eliminated so as to "cleanse the information structure."⁴⁸

In addition, Ershov pressed for new policies that would "rehabilitate the concept of individual initiative," which had been lost due to institutional obstacles. Finally, Ershov condemned the notion of 'official information' and called for the democratization of the information structure in society. He believed that the Soviet Union had to create legislation able to

⁴⁷ Ershov (1988), p. 61.

⁴⁸ Ershov (1987), p. 62

deal with such subjects as the free movement of information and the protection of intellectual property.⁴⁹

By 1988 even the KGB, infamous for its suppression of information, began to speak out for a more liberalized policy towards information control and information technologies. The Department Chief at the Scientific Research Institute of the KGB, V. Rubanov, writing in the journal *Kommunist* states:

The tendency toward the increased role of information in the life of society is the basis for the conclusion that under the present conditions of historical competition the social-economic system that will win is the one that possesses the higher quality information, that assimilates it faster, in greater volume, and more efficiently for the attainment of mankind's common goals.⁵⁰

Rubanov condemned the "odious and archaic system of secrets," and control of information technologies that developed during the years of the 'Great Patriotic War' and that continued into the era of the Cold War and beyond, although admittedly in a slightly more relaxed fashion.

Nonetheless, Rubanov, as a conservative theorist, still remained committed to the idea that the role of the state was to legislate a sphere of discourse for the general population, and that specific areas of information remained the purview of the state. He states:

⁴⁹ Ibid., pp. 62-63.

⁵⁰ V. Rubanov, "'Ot Kul'ta Sekretnosti'-K informatsionnoi Kul'ture," (From the 'Cult of Secrecy' to the Information Culture), *Kommunist* No. 13 (1988). Translated in *Soviet Review* Vol. 30, no. 5 (September-October, 1989) p. 18.

The view of information as both medium and an object of political control serves as a guide for identification of Soviet society's needs for knowledge and for determination of the potential of state organs and social institutions to most completely satisfy these needs in accordance with the goals of socialist modernization and development...we are entitled to regard the state's means of influencing information processes in society as a key political condition and legal form of development of *glasnost* and of securing the more efficient use of the nation's information potential.⁵¹

Rubanov based his opinion on the state of East-West relations and on "the realities of Soviet society's political, and legal information culture."⁵²

Despite the attitudes of conservatives such as Rubanov, Gorbachev's recognition of the role of information in society had already signalled a change in official thought and policy towards information technologies. This was readily apparent in the article "Social Aspects of Informatization," by Dr. Dzhermen Gvishiani, Dmitriy Chereskin and Georgiy Smolyan. These authors held similar views with other Soviet theorists, in that they advocated the broad dissemination of information technologies into all realms of Soviet life. Furthermore, they asserted that it was essential that information technologies become a mass phenomenon, whereby citizens would interact with information technologies in all their daily activities.⁵³

⁵¹ Ibid., p. 19.

⁵² Ibid., p. 20.

⁵³ Gvishiani et. al., p. 32.

The article by Gvishiani, Chereshekin and Smolyan was ground breaking as it analyzed the informatization of the USSR "under the conditions of the establishment of a market economy." While previous studies had principally focused on the role of the state implementing informatization, the ideas of this study were firmly rooted in market mechanisms. Rather than having the state directly involved in promoting informatization, the role of government is perceived as more peripheral. The state should create the necessary conditions to allow the market to function in a efficient and orderly manner for the benefit of non-state actors. The authors write:

State control should be exercised only through a flexible credit, tax, and price policy, the lifting of obsolete administrative restrictions, the legal protection of intellectual property and the distribution and consumption of information goods. The state should play the role of incubator of new information technologies, creating the most favourably possible conditions for their development and implementation and supporting basic research in this area.⁵⁴

Finally, these authors proposed that informatization projects should be funded by private capital from commercial investment banks.

The article was affirmed by other authors who saw central planning as an impediment to the growth of an information society because of the ever increasingly rapid and dynamic changes occurring in the field of information technologies. V. Makarov states that "under the conditions of centralized planning, when

⁵⁴ Ibid., p. 34.

all decisions are made at the top, it is impossible to achieve this kind of dynamism."⁵⁵

Gvishiani and Chereskin and Smolyan observed that the USSR, like other economies, was having transitory difficulties integrating new information technologies into the economy. They also saw positive evidence that the transition was occurring in the USSR. In their view, the growth of the market economy was aiding that transition. The authors state:

In recent years the domestic market for information products and services has been expanding rapidly. Naturally, it is experiencing the same type of difficulties of the transitional period as the other economic structures. Nonetheless, it is having a certain destructive influence on obsolete, rigid, regulatory and monopoly forms of organization of information interaction and relations in a number of economic sectors, science, technology, and management. Furthermore, this market, which develops essentially uncontrolled and is supported by the still adolescent experience in foreign economic activities on the part of a number of cooperatives and governmental and joint enterprises, to a certain extent stimulates the social progress towards informatization.⁵⁶

It is quite clear that these authors were breaking with past Soviet theorists who regarded informatization as a state-directed undertaking.

With respect to the social impact of information technologies, Gvishiani, Smolyan and Chereskin were 'techno-optimists'. In their opinion, the growing quantity of information technologies would give the individual greater control over

⁵⁵ V. Makarov, "Science of information in the New Economic Mechanism," *Kommunist* no. 12 (August 1990). Translated in *JPRS-UKO-90-15* (6 November, 1990), p. 30.

⁵⁶ Gvishiani, p. 31.

information and social-political choices, which would "sharply increase the potential of free behaviour."⁵⁷ They regarded information technologies as an integral component of the policies of *glasnost* and democratization "based on the free exchange of information." In their opinion, information technologies are the mechanisms for obtaining and disseminating information.⁵⁸

In addition, information technologies would substantially alter employment patterns and the status of workers. They foresaw in the future a sharp decrease in the demand for industrial workers and an increase in knowledge and skilled workers. In a veiled reference to unemployment, the authors asserted that despite the growth of the service sector, that sector would not grow fast enough to absorb all of the primary and secondary sector workers who would be made redundant due to information technologies. The authors argued that the traditional social insurance system was inconsistent with new social-economic realities.⁵⁹

CONCLUSIONS

The evolution in Soviet information technology theory can be attributed to three central factors. First, the evolution has been a reflection of the changes in information technologies

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ The authors based their observations concerning employment and sectoral shifts on Western experience., p. 32.

themselves. As the nature of information technologies evolved from massive computers, to personal computers, theoreticians were forced to reexamine old assumptions. The miniaturization and personalization of information technologies that took place in the 1980s fundamentally changed the nature of information technologies and their potential impact on society. Information technologies began to proliferate into aspects of society that were previously regarded as untenable.

A second factor that affected a change in Soviet theory was the growing sense of alarm amongst Soviet theorists as they looked westwards and realized that the Soviet Union was falling irreparably behind the West. The introduction of the personal computer clearly changed the perception of information technologies from a technology with limited access to a technology of the masses. Personal computers were the first of many tools that would informatize society. Naturally, this change forced theorists to reevaluate old assumptions about information technologies and their role in society.

Lastly, changes within the political sphere of the Soviet Union allowed theorists to consider ideas beyond previously restricted theoretical boundaries. Formerly, the publication of theoretical material advocating the reliance of market forces in the main CPSU mouthpiece *Kommunist* would have been unthinkable. Gorbachev's policies of *glasnost* significantly widened the parameters on theoretical exploration and allowed theorists to break long-standing taboos.

While many of the Soviet theorist such as Vinogradov viewed information technologies as a means towards the perfect collective society, many of their American counterparts, including Daniel Bell looked to computers to fulfil the promises of the writers of the Declaration of Independence and the Bill of Rights.

CHAPTER TWO
SOVIET POLICY TOWARDS
INFORMATION TECHNOLOGIES

"High-coercion systems are low-information systems." David Apter

Throughout their respective histories, the Soviet Union and its predecessor, the Russian Empire had a dual but contradictory policy towards information technologies. To improve the military and administrative capabilities of the state, both regimes attempted to introduce the latest advances in communication and information technologies (and later, computing technologies). Concurrently, Russian and Soviet authorities attempted to control access to these same technologies in order to protect the state's monopoly on information and the means of communication.

For the Czars, this task was simple by virtue of the sheer size and cost of the early information technologies (essentially the printing press, and telegraph\telephone systems). Very few individuals in Russia could afford to buy a printing press and their size made them impossible to hide. Czarist policies also prohibited the operation of a press without special authorization. The introduction of the steam press into Russia was indicative of the Czar's strict policies in contrast to developments elsewhere in the West. Whereas in England, the first steam-operated printing press was introduced by the newspaper the

Times, in Russia it was introduced by the ministry of the Internal Affairs.¹

Although Russians played a significant role in the invention of the telegraph and telephone, their utilization was slow to grow in Russia due to a shortage of government capital. In order to build telegraph lines, the Czar was forced to grant private concessions. Nevertheless, he maintained control over what was transmitted over the lines through various legal codes and a telegraphic charter. These measures prohibited the transmission of messages deemed threatening to life and health, or hostile to the interests of the state. Telegraph operators who violated the codes faced severe fines, as well as the death penalty.²

LENIN-KHRUSHCHEV (1917-1953)

During the Russian revolution, control of the means of communications was one of the primary objectives of the Bolsheviks during their seizure of power.³ The Bolsheviks accomplished this goal, taking control of the Central Post Office, the telegraph offices, the news services, and the telephone exchanges. The Bolsheviks' seizure of the mediums of communication gave them an important advantage in coordinating the revolution, and denying others the ability to organize

¹ Frederick Starr, "Technology and Freedom in the Soviet Union," *Technology Review* (May-June 1984), p. 41.

² Starr (1990), p. 25.

³ Robert V. Daniels, *Red October*, (Boston: Beacon Press, 1984), p. 114.

counter-revolutionary activities. In addition, the Bolsheviks oversaw the messages being transmitted. Commissars were assigned to the news services to censor journalists' news dispatches.⁴

On 27 October 1917, immediately after the revolution, Lenin signed a 'Decree on the Press' and 'General Regulations on the Press'. These proclamations prohibited the operation of non-Bolshevik presses, and imposed censorship restrictions.⁵ These measures--supposedly temporary--were justified on the basis that the press would "drown the recent victory of the people."

After the revolution, the Bolsheviks took measures to reinforce their control of the vertical conduits of information, while suppressing horizontal communication. One of the measures undertaken was the de-privatization and nationalization of all printing and film making facilities, which subsequently became the property of the State and the Party. Another measure was the creation of the State Telegraph Agency, which monitored all telephone and telegraph communications.

The ultimate goal of such measures was to isolate and atomize Russian society, thereby minimizing the ability of individuals or groups to engage in counter-revolutionary activities. It is reported that in the early years after the revolution, Leon Trotsky proposed to Stalin that a modern telephone system be built in the new Soviet State. Stalin brushed

⁴ Ibid., p. 149.

⁵ Gayle D. Hannah, *Soviet Information Networks*, (Washington D.C.: CSIS Publications, 1977), p. 7.

the idea off, replying, "I can imagine no greater instrument of counter-revolution in our time."⁶

The segregation of Soviet society also facilitated the indoctrination\education of the population with the ideas of Marxism-Leninism.⁷ An early lesson learned by the Bolsheviks in advancing their goal of educating the populace, was that the medium for disseminating propaganda was often as important as the message itself.

Since over half of the population of the Soviet Union following the revolution was illiterate, the Bolsheviks needed to communicate in a way that bridged the illiteracy gap.⁸ To this end, the Bolsheviks built agitation and propaganda trains equipped with film projection equipment. These trains travelled throughout the country, especially into rural regions, showing films extolling the virtues of communism.⁹ While the films were primarily designed to teach the population about the attributes of communism, the trains and the projection equipment were meant

⁶ Quoted in Wilson Dizard's article, "Mikhail Gorbachev's Computer Challenge," *The Washington Quarterly* (Spring 1986), p. 157.

⁷ Walter R. Roberts and Harold E. Engle, "The Global Information Revolution and the Communist World," *The Washington Quarterly*, (Spring 1986), p. 141.

⁸ As late as 1920 only 44 percent of the population in the age group 9-49 were literate. Paul E. Lydolph, *Geography of the U.S.S.R.* 5th ed. (Elkhart Lake, W.I.: Misty Valley Publishing, 1990), p. 148

⁹ Ann Williamson, "Cinematic Alchemy," *Business in the USSR*, (December 1990), p. 96.

to display and "impress the illiterate peasants with the modernity of Bolshevik power."¹⁰

The Soviets also expanded radio, which before the revolution was in its infancy and almost exclusively a military technology. A plan in 1932 called for the building of 14 million radio receivers. However, only 3.5 million were produced by the target date due to shortages of vacuum tubes. Consequently, the Soviets began the construction of fixed-wire radio systems that did not require vacuum tubes.

Until the mid-1980s, most of the Soviet population received radio transmission through fixed-wired networks. This system broadcasted from Moscow to regional or local networks where the programs were then sent by way of wires to homes or other buildings. These fixed-wire networks also functioned as public-address systems for local regions.¹¹ In rural areas it was not uncommon for villages to have a loudspeaker on a lamp post in the village centre broadcasting Party slogans or editorials from *Pravda*.¹² The benefit of such a system was that it was closed to foreign or non-sanctioned broadcasts.

During the early years, these fixed-wired systems were largely located in factories or 'agitation centres'. The advantage of this was that propagandists and Party members could lead, scrutinize, and interpret discussions of the programs in a

¹⁰ Ibid., p. 31.

¹¹ Hannah, p. 27.

¹² Vachnadze, p. 253.

manner favourable to the Party line of the day. Soon afterwards, however, these systems were piped-in to apartments. Once these systems were allowed into the private home it opened up the opportunity for private listening, where unorthodox or unwanted views could be discussed amongst confidants. These discussions had the potential to undermine seriously Soviet propaganda efforts.

The Bolsheviks' dual policies of introducing and maintaining control over new information technologies, and suppressing horizontal communication became an entrenched component of the Soviet system. These measures, to a large degree, shaped the policies of the Soviet state towards information technologies for the next seventy years.

KHRUSHCHEV TO GORBACHEV (1953-1985)

Under Stalin the totalitarian system, instituted by the Bolsheviks, reached its zenith in dominating the population. According to Soviet political scientist A. Migranyan, the regime "attempted to break all organic relationships and sought to bind every individual to the social set-up, irrespective of any horizontal or any other unauthorized bonds."¹³ Stalin maintained strict control over all forms of information technologies, through the manipulations of the secret police (M.V.D.) and arbitrary terror.

¹³ Andranik Migranyan, *Perestroika: As Seen by a Political Scientist*, (Moscow: Novosti Press Agency, 1990), p. 6.

Following the death of Stalin, the Soviet Union relaxed many of the stricter restrictions regarding information technologies. In fact, during this period there was substantial growth in new types of information technologies such as ham radios, wave radios, television, and cassette recorders. These new types of information technologies, along with the growth of the more traditional information technologies, in some cases reinforced vertical communication. In other cases, information technologies eroded the state's monopoly over horizontal forms of communication.

During the 1950s-1960s, radio wave sets began to proliferate within the Soviet Union, the reason for their growth being twofold. First, wave sets were imported through private transactions by diplomats and others who managed to travel abroad. Second, the Soviets began producing their own domestic versions of wave and shortwave radios because authorities wanted to broadcast to rural areas where lengthy distances between settlements prohibited fixed-wire systems.¹⁴

Unfortunately for Soviet authorities, the expansion of wave radios had serious negative consequences. Listeners inevitably tuned in to international broadcasts.¹⁵ During the Cold War, the West intensified its international radio broadcasts aimed

¹⁴ Hannah, pp. 27-28.

¹⁵ For a comprehensive analysis of the trans-national effects of information technologies see David Benn's chapter, "Communication across Frontiers," in *From Glasnost to Freedom of Speech: Russian Openness and International Relations*, (London: Royal Institute of International Affairs, 1992), pp. 29-44.

towards the Soviet Union. Similarly, the Soviet Union began radio broadcasts directed at the West. However, it was the Soviets who felt the most vulnerable by these trans-border transgressions. By 1960, Radio Liberty claimed that twenty-seven million transistor radios in the USSR could tune into its broadcasts. Other estimates reported that in a typical week about twenty percent of Soviet adults tuned in to Western broadcasts.¹⁶

In response, under Stalin there were strict penalties imposed for those caught listening to Western radio broadcasts, and the regime attempted to confiscate all short-wave radios. Authorities even encouraged people to inform on their neighbours.¹⁷ Later, under Khrushchev and Brezhnev, punishment for listening to foreign broadcasts was de-criminalized. However, anyone caught discussing what they had heard or distributing material gleaned from Western broadcasts was dealt with 'ruthlessly'.¹⁸ In addition, Soviet authorities passed a resolution in 1967-1968 to reverse the trend back towards fixed-wire systems. Nevertheless, the proverbial genie was already out of the bottle.¹⁹

The principal Soviet response to international radio broadcasts was jamming. The Soviet Union was reported to have deployed over two thousand transmitters in one hundred cities but

¹⁶ Roberts, p. 143.

¹⁷ Vachnadze, p. 273.

¹⁸ Ibid.

¹⁹ Hannah, p. 28.

Soviet success in jamming broadcasts was only marginal. The sheer number of international signals made it impossible to block effectively all the signals, especially in the countryside. Moreover, the economic cost of jamming was reported to have cost several hundred million dollars annually. This was roughly equivalent to what the Soviets spent broadcasting their own international programmes.²⁰ To a large degree, jamming was ineffective in relation to the financial burden it placed on the State.

In later years, the price of jamming was also political. As a signatory to the Final Act of the CSCE Helsinki Accords (1975), the Soviet Union was obligated to uphold the principals of improving, and allowing for the free circulation and exchange of information between countries. Soviet jamming of foreign broadcasts undermined its international credibility. Each year when the CSCE review session met to scrutinize compliance of the Helsinki Treaty, the Soviet Union was forced to defend its continual resistance to ending jamming.²¹

Soviet authorities, in order to justify their restrictive policies on information technologies, argued that the Soviet masses were vulnerable to Western propaganda because they were politically immature. Evgenii Velikhov, a Vice President of the

²⁰ U.S. Congress, Commission on Security and Cooperation in Europe. *Implementation of the Helsinki Accords: Hearing Before the Commission on Security and Cooperation in Europe*, 101st Cong., 1st sess., 16 March, 1989, p. 6.

²¹ Ibid., p. 6.

Soviet Academy of Sciences, asserted that the Soviet people had to be protected until they could distinguish reality from propaganda.²²

Despite the intrusion of foreign broadcasts, domestic radio remained the dominant technology for the vertical transmission of information. In fact, the intrusions of Western broadcasts forced the Soviets to 'liven up' and introduce a greater variety of programs to Soviet radio, which brought back some listeners to the fold. Nevertheless, the ideological content and message of radio remained the same.

Television was considered by the Soviets as another important medium for vertical communication. Established in the early 1950s, television rapidly grew from 2.5 million sets in 1958 to 30 million a decade later. By the end of the 1970s, the television was practically a universal household appliance.²³

The significance of television was immense for Soviet authorities for it communicated with rapidity and enormous reach. By using television, the government could transmit a single, approved, visual message across the country. According to Soviet media specialist E.G. Bagirov, television was unequalled in its credibility amongst all media technologies.²⁴ This credibility

²² Loren Graham, *Science and the Soviet Social Order*, (Cambridge, Mass.: Harvard University Press, 1990), p. 12.

²³ Starr (1990), p. 34.

²⁴ Ellen Miciewicz, "Making the Media Work: Soviet Society and Communications." in *Soviet Society Under Gorbachev: Current Trends and the Prospects for Reform*, ed., Maurice Friedberg and Heyward Isham, (Armonk N.Y.: M.E Sharpe 1987), p. 132.

was exploited to its fullest by the Soviet authorities. Arni Vartanov, a Soviet professor of mass communication, writes:

Of course, television is a prime myth-maker in every society...But the centralized organization of Soviet television makes national myths much easier to generate and less open to criticism. Television-generated myths were readily used by ideologists during the Brezhnev years.²⁵

The significance of Soviet myth-making was especially important since by the 1970s television had become the principal source of information concerning domestic and world events.

In the 1970s, the Soviets become increasingly concerned with another trans-border danger--satellite television. Before the advent of satellite television, trans-border intrusions of television programmes were virtually impossible (except into a few small border areas within the Baltic region) due to the short radius of TV waves. However, satellite television could technically penetrate into the whole Soviet Union.

In response to this new danger, at the United Nation's conference of the International Telecommunications Union (1977) the Soviets pushed through technical measures on the location of stationary satellites and broadcast zones. These measures effectively eliminated the threat of satellite television penetration into the USSR.²⁶

To further reduce the chances of Western television penetration, the Soviets adopted different technical standards.

²⁵ Arni Vartanov, "Television as Spectacle and Myth," *Journal of Communication* Vol. 41, no. 2 (Spring 1991), p. 164.

²⁶ Havlicek, p. 16.

The Soviets purposely chose the French SECAM system, and further adjusted it so it would be incompatible with other systems, namely the PAL system used by most of the world.²⁷ In the future, the VCR would undermine all the Soviet efforts to keep foreign television out of the Soviet Union (see CHAPTER FIVE).

Operating together, television and radio systems created a highly effective vertical communication system. These technologies were particularly useful since they did not demand the same level of attentiveness as reading a newspaper or book. TV and radio reached a large proportion of older, illiterate or semi-literate Soviet citizens and were particularly effective in reaching younger persons who had yet to develop a sophisticated knowledge of the world and tended to take information on TV and radio at face value.²⁸

While the traditional types of information technologies grew, new technologies began to grow as well. In the 1960s, Soviet authorities implemented programs to increase telephone service. Between 1965 and 1974, twice as many telephones were installed as compared to the period between 1940-1965.²⁹ The growth in telephone service was particularly pronounced in urban

²⁷ Ibid.

²⁸ For a detailed study on the effectiveness of the Soviet media see Ellen Mickiewicz's article "Making the Media Work: Soviet Society and Communications," in *Soviet Society Under Gorbachev: Current Trends and the Prospects for Reform*, ed., Maurice Friedberg and Heyward Isham, (Armonk N.Y.: M.E Sharpe 1987), pp. 131-150.

²⁹ Starr (1990), p. 32

areas. Intercity communication grew significantly, as did international calls (non-direct dialled), the number of which increased seven-fold in the decades before 1974. Despite the growth, government expenditures on the telephone infrastructure received far less investment compared to the West.³⁰

The growth in telephone service had a significant effect in increasing real-time horizontal communication. Moreover, as international and domestic communications grew, the ability of the State to monitor all calls diminished. These developments allowed for the formation of hundreds, if not thousands, of loosely connected information networks. In addition, thousands of Soviet citizens could speak with friends and relatives in the West. This allowed them to discuss, and compare information and different interpretations of news events. Information learned from foreign relatives and friends would then be repeatedly passed through the system of informal networks.³¹

The ham radio was another new technology developed during the Brezhnev years. By the mid-1970s, there were about 15-20 thousand ham radio operators in the Soviet Union who 'listened in', and made contacts with their foreign counterparts. Nevertheless, ham operators faced strict operating restrictions.

³⁰ Erik Whitlock reports that until the mid-1980s the Soviet Union was spending less than 1 percent of its total gross fixed investment on all public communications (telecommunications, telegraphs and radio broadcasting), see "Russian Telecommunications: A Monopoly in Transition," *RFE/RL Research Report* Vol. 1, no. 36 (September 11, 1992), p. 58.

³¹ David Shanor, *Behind the Lines: The Private War Against Soviet Censorship*, (New York: St. Martin's Press, 1985), p. 80.

Since ham radio operation was considered a paramilitary activity, it was controlled by the Voluntary Society for the Assistance to the Army, Navy and Air Force (DOSAAF). The Society granted all radio operating licences and was the sole distributor of equipment. Operating licences were granted on approval of the Party and the KGB.

The importation of tape recorders in the early 1960s illustrates the policy dilemma over information technologies often faced by Soviet authorities. The Soviet government had the choice to either co-opt the technology or risk losing control over the technology. Here, the government chose in favour of producing a domestic model. Without any government restrictions, sales of tape recorders skyrocketed. By 1965, sales of the Yauza series tape recorder reached half a million, and one million by 1970.³²

The social impact of tape recorders was devastating for Soviet authorities. While audio cassettes were used innocuously to record family celebrations and as a form of electronic mail for families separated by great distances, they also became an important vehicle for disseminating unsanctioned domestic and foreign recorded music, and satirical speeches. For dissidents, cassette tapes were compact instruments for mass communication

³² Starr (1990), p. 37.

and the storage of underground material. The new medium of electronic samizdat was dubbed magnitizdat.³³

The advent of the photocopier and other xeroxing technologies during the late 1950s-early 1960s was considered by Soviet authorities to be a dangerous occurrence, if improperly managed. Under Soviet law these machines were considered 'printing presses' and could not be privately owned. No machine was left unguarded lest some dissident gain access and make copies of some samizdat pamphlet or new novel. A ban on the unauthorized use of photocopiers and other duplicating devices had been imposed by an unpublished decree of the Council of Ministers.³⁴

The Soviets instituted cumbersome procedures for the use of duplicating machines. The acquisition, installation, and the organization of the operation of most duplicating devices required authorization from the Ministry of Internal Affairs.³⁵ Photocopiers had to be kept in a locked room with an 'iron-reinforced door' and bars on all windows. The operating instructions were considered a State secret, and only specially authorized personnel were allowed to operate the machines. Strict records were kept of all duplicated texts, the numbers of copies,

³³ Donald Shanor gives a detailed analysis of the use of tape recorders by dissidents in his book *Behind the Lines*, pp., 158-162.

³⁴ Benn, p. 9.

³⁵ S. Mostovshchikov, "Is Photocopying Out From Under Suspicion?," *Izvestia* (October 4, 1989), p. 24. Translated in *CDSP* Vol. 41, no. 40 (1989), p. 24.

and the consumption of paper.³⁶ The machines were regularly monitored by Department No. 2 of the USSR Ministry of Internal Affairs' Chief Administration for the Safeguarding of Public Order.³⁷

Despite the erosion of control over the horizontal use of information technologies, the Soviet Union was actively developing new technologies to strengthen its vertical control over the populace. In the late 1950s and 1960s the U.S.S.R. established centres for the development of informatics. The prime objective of these centres was the development of computer, and computer storage systems.

Computer systems were necessary due to the growing complexity of the Soviet Union, which required the gathering of vast amounts of information concerning virtually every aspect of Soviet society. The State Planning Committee (Gosplan) used extensive computer resources, in Moscow and its regional branches, to coordinate the Soviet economy. To evaluate policy options, Soviet economists regularly constructed complex mathematical models that could only be run on powerful computers.³⁸

To maintain proper political control over the population, the KGB had its own advanced computer systems in order to maintain records on 'troublesome' individuals. The State Security

³⁶ Havlicek, p. 17.

³⁷ Mostovskii, p. 24.

³⁸ Starr (1984), p. 42.

Agency also gathered sizable quantities of sociological information to help the Central Committee\Politburo assess Party policies and the general mood of the populace.³⁹

In his last years, Brezhnev and the party began to take note of the growing computer gap between the USSR and the West. The Politburo turned to the Academy of Sciences for a solution. The Academy proposed an intensive drive towards computerization and the introduction of a computer-centred educational curriculum. However, the policy proposals formulated by the Academy were not enacted until Gorbachev became General Secretary of the CPSU.

In essence, during the Khrushchev-Brezhnev years the goals of policy-makers and Soviet leaders concerning information technologies remained limited. Amongst the political and technocratic elites, Seymour Goodman identified four goals regarding information technologies:

1. To attain gains in productivity and to modernize the industrial base.
2. To improve and modernize the economic planning and control mechanisms.
3. To support both military and internal security needs.
4. To present the image and some of the substance of a progressive society both to the people of the USSR and the outside world.⁴⁰

³⁹ Ibid., p. 45.

⁴⁰ Seymour Goodman, "Information Technologies and the Citizen: Toward a "Soviet-Style Information Society," in *Science and the Soviet Social Order*, Loren Graham ed., (Cambridge, Mass.: Harvard University Press, 1990), pp. 53-54.

THE GORBACHEV ERA: A NEW AGENDA

The ascension of Mikhail Gorbachev began a revolution in Soviet policies towards information technologies, and information. To understand Gorbachev's information technologies policies it is necessary to examine the root causes of his entire reform program. After becoming General Secretary, Gorbachev has sought to revitalize the Soviet economy and society. In a resolution formulated by Gorbachev and passed at the 27th Party Congress (February-March 1986), Gorbachev stated:

The highest aim of the party's economic strategy has been and remains a steadfast rise in the material and cultural standard of living of the people. The realization of this aim during the forthcoming [15 year] period calls for the acceleration of social and economic development, and all the necessary means to intensify and to increase the effectiveness of production, based on scientific and technical progress.⁴¹

There and in other speeches, Gorbachev stressed the raising of economic productivity through the acceleration of scientific-technical progress and efficiency. Gorbachev placed particularly strong emphasis on microelectronics, computer technology, instrument making and the entire informatics industry, which he called the "catalysts of progress."⁴²

Gorbachev's policy towards information technologies was rooted in the global economic trend away from extensive growth

⁴¹ Mikhail Gorbachev, quoted in Richard W. Judy and Virginia L. Clough, *The Information Age and Soviet Society*, (Indianapolis: Hudson Institute, 1989), p. 70.

⁴² Mikhail Gorbachev, *On the Tasks of the Party in the Restructuring of Economic Management*, (Moscow: Novosti Press Agency, 1987), p. 37.

and towards intensive growth.⁴³ During the 1960s when the prices of basic commodities rose due to increasing scarcity, the advanced industrial nations began to maximize resources and productivity through the use technology, informatics, and increased knowledge. The Soviet Union was late in joining the trend towards intensification due to a greater abundance of low cost raw materials.

To further aggravate the situation, the leadership of Leonid Brezhnev and the party *nomenklatura* had a largely 'status quo' philosophy, and were reluctant to tinker substantially with the Soviet economy or political system. Following Brezhnev, the Soviet Union was led by the elderly Andropov and Chernenko whom through either death or conservatism, did little to change the economic situation.

Once Soviet economists and planners began to introduce measures designed to improve efficiency and technological innovations they realized that the Soviet command-system was unable to adjust to these new measures because of several systemic impediments. First, the economic command-system centred in Moscow had become too large and bureaucratic. As a result, the whole system had become rigid and overloaded. Innovations and ideas took considerably longer to evolve from the blackboard to the production line than they would have in the West. In fact, Marshall Goldman not so facetiously concludes:

⁴³ Ibid., pp. 36-43.

...that the quickest way for Soviet industry to avail itself a new product is to sell a license for that product to foreign firms. The foreign firms have often been able to put that product into production and export it back to the Soviet Union before the Soviets themselves are able to produce it.⁴⁴

A second fundamental problem was the regimes' strict control over information. The Soviets had created a hierarchical information system based on individual rank or institutional prestige, which stymied access to information and freedom to discuss policy issues. The net result was a "system of compartmentalized information, which gave Soviet leaders poor protection against false data, little avail against professional monopolies of advice and small opportunity short of the very top, to debate the 'big picture'."⁴⁵

An information-starved system of governing inherently leads to policy errors. As Karl Deutsch points out, a government needs to receive unhampered three types of information in order to govern effectively: (i) information about the outside world; (ii) information about the past; and (iii) information about itself and its components.⁴⁶ A lack of information also limits the development and choices of policy alternatives by leaders.⁴⁷ In

⁴⁴ Marshall Goldman, *Gorbachev's Challenge* (Markham: W.W. Norton, 1987), p. 105.

⁴⁵ Thane Gustafson, "The Crisis of the Soviet System of Power and Mikhail Gorbachev's Political Strategy," in *Global Rivals* Bialer and Mandelbaum ed., (New York: Random House, 1989), pp. 196-197

⁴⁶ see Karl W. Deutsch et al., *Political Community and the North Atlantic Area* (Princeton. Princeton University Press, 1963).

⁴⁷ Ibid, p. 197.

the Soviet context, this led to severe social, environmental and economic policy errors. Soviet academician, V. V. Pustogarov states:

The administrative command-system created a 'cult of secrecy' and it in turn strengthened and cemented that system, which led to the deformation of the political, economic and social structures of Soviet society, and of its values and ideas. The 'secret' stamp on many channels of information, including statistical data, kept us from knowing what was happening to us and where we were going. What kind of security was that, when the country slid into stagnation and through it into a crisis?⁴⁸

Clearly, the attempt by Soviet leaders to control the information flow backfired, often blinding the leadership themselves of important data.

Soviet restrictions on information and information technologies also had a detrimental effect on Soviet science. Access to information technologies were restricted amongst scientific workers, which made it difficult to carry on research and to communicate with colleagues. In a comprehensive emigre survey on Soviet scientists conducted by Harley Balzer, significant impediments to free information exacerbated by the poor development, and limited access to information technologies were reported. For example, the use of photocopiers was limited to a small portion of the scientific community. Typewriters only

⁴⁸ V. Zakharko "The 'Secret' Stamp in the Era of Glasnost," *Izvestia* (April 28, 1989), p. 4. Translated in *CDSP* Vol. 41, no. 17 (1989), p. 9.

became commonly available by the mid-1980s, and the few accessible PCs often had no printers.⁴⁹

The result of the of the restrictions on Soviet scientists were obvious--while Western science was booming, Soviet science was stagnating, notwithstanding a few spectacular results in the military and space fields.⁵⁰

Soviet society also became a casualty of Soviet information restrictions. This had serious social repercussions. Vertical decision-making and information distribution had hindered debate and intellectual stimulation at all levels of society. The stagnation and inertia in the social sphere resulted in a highly bureaucratized and conservative society where initiative and independent thought was condemned, not only directly but systemically.⁵¹ A soviet specialist writes "total secrecy has been an immensely heavy burden on both our economy and the life of our society; it is reflected in a mass psychology whereby

⁴⁹ Harley Balzer, *Soviet Science on the Edge of Reform*, (Boulder Co.: Westview Press, 1989), p. 155. For years, Soviet authorities debated whether to classify computer printers as typewriters--which were legal--or printing presses, which were strictly illegal.

⁵⁰ Ronald H. Hill, "Glasnost: Communications and the Communist System," *Contemporary Review* Vol. 251 (October 1987), p. 176.

⁵¹ A. Migranyan, p. 4. In addition, see Loren Graham's chapter in *Technology, Culture and Development*, pp. 3-24, for an analysis of the relationship between social development and technology. Graham concludes that Soviet modernization cannot progress if there is no substantial change in the social-political sphere.

millions of people shut themselves up in their own world and were afraid of saying something they shouldn't..."⁵²

Gorbachev realized that the economic malaise could not be cured without resolving the inertia and stagnation of Soviet society.⁵³ As John Battle notes:

...Gorbachev and his allies began to realize that the country's economic malaise was intrinsically linked to a deeper moral, social and cultural crisis. To decrease the alienation gap between government and society, a prerequisite of economic reform, Soviet reformers understood that they must first overcome public apathy and inertia. This could only be accomplished by promoting popular participation in the daily life of the country. If decisive changes are to occur, Soviet citizens must understand the need for, accept, and be willing to participate in the reform process.⁵⁴

To bring about popular participation and the democratization of Soviet society, clearly, meant the political liberalization of the vertical channels of communication. As well, democratization required the regeneration of long suppressed horizontal channels of social intercourse.

⁵² Zakharko, p. 10.

⁵³ A.G. Zdravomyslov, "The New Social-political Thinking and the Problem of the 'Technological Challenge'." (*Novoe sotsial'no-politicheskoe myshlenie i problema 'tekhnologicheskogo, '*) *Rabochii klass i sovremennyi mir*, No. 6, (1987), pp. 3-15. Translated in *New Directions in Soviet Social Thought*, Murray Yanowitch ed., New York: M.E. Sharpe (1989), p. 66.

⁵⁴ John Battle, "Uskorenie, Glasnost and Perestroika: The Pattern of Reform Under Gorbachev," *Soviet Studies*, Vol. XL, no. 3, July (1988), p. 570.

NEW INITIATIVES

To rectify the situation, Gorbachev launched several initiatives, and alternately lifted and changed laws that stifled multi-directional communication within Soviet society. Initially, Gorbachev's communication and computer policies were based on managed change to insure the continued state monopoly of information and communication.⁵⁵ Later, Gorbachev was forced to readjust his policies to new realities and challenges that became apparent over time.

In the early years, Gorbachev's policy decisions and strategies were heavily influenced by the writings and policy proposals coming out of the newly established division of the Academy devoted to informatics. The new division was headed by A. Ershov, D. M. Gvishiani and E. P. Velikhov. They argued that the 'computerization' and 'informatization' of Soviet society would eliminate a multitude of societal problems.⁵⁶

Gorbachev's first and foremost initiative was the introduction of the policies of *glasnost*; a policy intricately linked to economic progress. While many observers of the Soviet Union focused on the changes in the arts and media, this was just one component of the *glasnost* campaign. The prime objective of *glasnost*, however, was to promote popular participation within

⁵⁵ Wilson Dizard and S. Blake Swensrud, *Gorbachev's Information Revolution: Controlling Glasnost in A new Electronic Era*, Boulder Co.: Westview Press and the Centre For Strategic Studies, 1987), p. 7.

⁵⁶ Josephson, p. 41.

society with the ultimate goal of stimulating the economy. Ellen Mickiewicz writes:

The interrelationship between productivity and participation--is a key tenet of the Gorbachev reform, and it depends to a considerable extent on the renunciation of coercive methods and thickening the sub-system of local or autonomous attachments and activities (sometimes referred to as civil society).⁵⁷

The revitalization of the economy was the primary goal, and the stimulation of 'civil' society was rather a means to an end.

To accomplish the goal of stimulating Soviet society, the horizontal barriers that prevented popular participation and constrained the free flow of information had to be liberalized. Information technologies, as the conduits of information and communication, needed to be made more accessible to the public.⁵⁸ Indeed, Gorbachev and other top Party leaders realized that it was impossible to sustain a modern Soviet Union without revolutionizing the flow of information through telecommunications and computerization.

Alarmed by the computer and telecommunications gap between the Soviet Union and the West, Gorbachev made the modernization of these two sectors a top priority. Shortly after becoming General Secretary, Gorbachev launched several intensive

⁵⁷ Ellen Mickiewicz, "Mobilization and Reform: Political Communication Policy Under Gorbachev," *PS: Political Science & Politics* Vol. 22. no. 2 (June 1989), pp. 199-200.

⁵⁸ Alexei Korobov, "Perestroika Needs Informatics," *Business in the USSR* (February 1990), pp. 44-45.

computerization programs with the aim of shortening the growing gap between East and West.

Gorbachev's first initiative announced in the spring of 1985, launched a campaign to introduce a secondary school computer curriculum. A concrete sign of Gorbachev's commitment was the assignment of the first 100,000 personal computers produced in the USSR to schools.⁵⁹ The lack of computer education in the secondary school curriculum was a prime concern of Soviet officials and policy-makers. Academician A. Ershov of the Siberian Academy of Sciences led the drive for the introduction of computer courses in secondary schools.⁶⁰

By late 1985, school reforms were implemented and courses on information sciences and computer science were added to the Soviet secondary school curriculum. The new general education course devised to begin at the ninth grade was called "fundamentals of information science and computer technology."⁶¹

The introduction of computer courses was a major undertaking as it required a massive retraining program for teachers. In addition, 70 000 computer classrooms had to be built throughout

⁵⁹ Andrei Ershov "The School on Roads of Reform: Computer in the Classroom," *Pravda* (February 6, 1985), p. 3. Translated in *CDSP* Vol 37, no. 6 (March 6, 1985) pp. 1-2.

⁶⁰ Richard W. Judy and Jane M. Lommel, "Computer Education: An Interim Report," in *The Future Information Revolution In the USSR*, Richard F. Starr ed (New York: Crane Russak & Company), p. 24.

⁶¹ Ershov (1988), p. 61.

the Soviet Union.⁶² Moreover, to equip properly these computer rooms required a minimum of one million personal computers.⁶³

The goal of introducing computers into all Soviet secondary schools while ambitious was hardly realistic due to both technical and human inadequacies. Technically, the Soviet personal computer--the Agat--was of poor design and quality. Moreover, it could not be produced in sufficient quantities to fill a fraction of the schools throughout the USSR.⁶⁴ A second problem was the lack of secondary infrastructure required to fulfil the plan--adequate computer programs, schools with proper electrical wiring. Furthermore, the USSR lacked a maintenance infrastructure to keep the machines working.

The accelerated computerization program that was formulated under Erezhnev, and initiated by Gorbachev was also geared towards accelerating production. It was announced in *Pravda* on 4 January 1985 that the Politburo had passed a resolution to accelerate the production of information technologies. Specifically, the resolution called for the increased production of computer-aided-design (CAD) and computer-aided-manufacturing

⁶² A. Sokolov, "The School Today and Tomorrow: Computers at the Desk," *Sovetsky Kultura*, (December 25, 1984), p. 3. Translated in CDSP Vol. 37, no. 6 (March 6, 1985), p. 3.

⁶³ Ershov (1985), p. 1.

⁶⁴ In 1987, only 13.7 percent of schools had computer laboratories, and these numbers were worse when broken down by republic and rural\urban areas. While, 21.6 percent of Ukrainian schools had computers, there were 0.6 in Kirgizia and Turkmania. Rural areas, even in Russia, were comparable to the Central Asian Republics. See Judy, p. 35.

(CAM) machines and other high-tech equipment directly related to material production.⁶⁵

Later that year Gorbachev launched a second computer initiative. This measure aimed at intensifying the manufacture and use of computers, microprocessors and CAM machines in the national economy up until the year 2000. The initiative was a blueprint to propel the economy towards the post-industrial age.⁶⁶ Some of the targets of the plan included: (i) growth in the computer sector by 240 percent by the year 1990; (ii) the production of 1.1 million personal computers with disk drives of 600-900 Mbytes.⁶⁷

To coordinate the government's computerization objectives, the USSR State Committee for Computers and Information Science was established. Its objective was to supervise the creation, development, manufacturing and servicing of computer technology. Soon afterwards, the Soviet Academy of Sciences established a new department of information science, computers and automation. It also set up about ten research institutes to develop new types of information technologies.⁶⁸

⁶⁵ "In the Politburo of the CPSU Central Committee," *Pravda* (January 4, 1985), p. 1. Translated in *CDSP* Vol. 37, no. 1 (January, 1985), p. 14.

⁶⁶ "Scientific and Economic Survey: Horizon of Computer Technology," *Ekonomicheskaya Gazeta* No. 15, (1985), p. 2. Translated in *CDSP* Vol. 37, no. 24 (1985), pp. 11-12

⁶⁷ Seymour Goodman, "The Information Technologies and Soviet Society: Problems and Prospects," *IEEE Transactions on Systems, Man, and Cybernetics*, Vol. SMC-17, No. 4 (July-August 1987), p. 538.

⁶⁸ Ershov (1988), p. 61.

Gorbachev also singled out the telephone system as a communication technology needing substantive improvement. Soviet planners had long neglected the telecommunication sector by underestimating its role in complex economies.⁶⁹ By the 1980s, after decades of neglect the Soviet telephone system was in dire need of modernization. The Soviet media in a series of articles in *Pravda* and *Izvestia* was particularly critical of the Ministry of Communications for failing to utilize its "existing capabilities and potentials," and "for its poor performance in raising the standard of service to the public."⁷⁰

In March 1985, *Izvestia* reported a major CPSU Central Committee and Council of Minister's resolution, "On Measures to Strengthen the Material and Technical Facilities of Telephone Communications and to Develop Telephone Services to the Public in 1986-1990 and in the Period Up to the Year 2000."⁷¹ The resolution was the first long-term strategic plan for restructuring the Soviet telecommunication system. The resolution projected the goals and needs of Soviet telecommunication up to the 21st century.

⁶⁹ Whitlock, p. 58.

⁷⁰ See A.I. Petrov, "Communication is a key Service," *Izvestia* (September 3, 1985), p. 2, and "In the Presidium of the USSR Supreme Soviet" *Pravda* (September 1, 1985), p. 2. Both articles were translated in *CDSP* Vol. 37, no. 35 (1985), pp. 26-27. There was also a critical editorial in *Pravda* see (September 26, 1985), p. 1. Translated in *CDSP* Vol. 37, no. 39 (1985), p. 23.

⁷¹ V. Tolstov "Telephone in Your Home," *Izvestia* (March 3, 1985), p. 2. Translated in *CDSP* Vol. 37, no. 9 (March 1985), pp. 21-22.

The resolution set many ambitious goals. Substantial improvements were planned for residential service where only one in four families had a telephone.⁷² The plan called for the number of apartments with phones to increase by nine million. If projected targets were met, eighty percent of all families would eventually have telephone service by the year 2000.⁷³

Regarding other services, the plan announced an annual addition of nine thousand public pay phones, and a 150-200 percent increase of long-distance pay telephones to be installed primarily in resort cities. The plan also called for the completion of the installation of telephone services to all state and collective farms, schools, and to all types of medical centres.⁷⁴

On the technical side, the resolution called for a massive modernization of the telecommunication infrastructure, some of which dated back to the period of the revolution. The measures in the resolution included: (i) the installation 12.1 million direct-dial telephone numbers in cities and rural areas during the 12th Five-Year Plan (an increase of sixty to seventy percent); (ii) to bring the percent of direct-dialled long-distance telephone communications in major cities up to 85 percent; (iii) the installation in most district centres direct-

⁷² AI. Petrov, "Communications is a Key Service," *Izvestia* (September 3, 1985), p. 2. Translated in *CDSP* Vol. 37, no. 35 (1985), p. 27.

⁷³ Tolstov, p. 22.

⁷⁴ *Ibid*, p. 21.

dial links to their province, territory, and republic centres; (iv) the installation of electronic and semi-electronic telephone exchanges to replace manual operators and relay exchanges; (v) and the initial installation of fibre optic lines. Long-term plans call for the eventual installation of such services as call waiting, conference-call capabilities, and call-forwarding.⁷⁵

Despite Soviet efforts to improve the communication infrastructure of the state, Soviet officials steadfastly refused to relinquish control over communication technologies. For example, when the Soviets began promoting small private business (Law on Individual Labour, 19 November 1986), activities that would encroach upon the state's monopoly over communication and printing were strictly forbidden.⁷⁶

In October 1986, the CPSU set out a programme that outlined the Party's production goals for improving the level of consumer electronics for the period 1986-2000. The programme called for among other things the production of: 11.2-12 million radio receivers by 1990 and 15.3 in 2000; of tape recorders, 5.8-6.0 million and 7.8-8.0 million, respectively; of television sets, 10.6-11.0 million and 12.5-13.0 million; and of VCRs, 60,000 by 1990 and 120,000 by 2000.⁷⁷

⁷⁵ Ibid, pp. 21-22.

⁷⁶ I.I. Gladky, "On the Draft of the USSR Law on Individual Labour Activity," *Pravda* (English edition) (November 20, 1986), p. 5.

⁷⁷ "Comprehensive Program for the Development of Consumer Goods Production and the Service Sphere in 1986-2000," *Pravda and Izvestia* (9 October, 1985), pp. 1-3. Translated in *CDSP* Vol. 37,

By 1987 under the pretext of glasnost, there arose growing and open criticism of the more glaring forms of information control. For instance, there was increasing condemnation of the prohibitions on the use of photocopiers. Dr. Pyotr Fedoseyev, Vice President of the Soviet Academy of Sciences, complained that Soviet scholarship was being seriously inhibited by a regime that treated the photocopier as a 'class enemy'. The Ministry of Internal Affairs countered that they were not fundamentally opposed to liberalizing the rules on photocopying. However, they were opposed to 'non-labour income' derived from photocopying. Moreover, they were deeply concerned about the duplication and circulation of Western material.⁷⁸

During 1988, the Soviets took substantial steps in lifting the more dubious and self-defeating aspects of its control over information technologies. One of the steps taken was the opening up of more international switches. However, this move did little to alleviate the strong demand for international calls to and from the Soviet Union since Soviet telephone line capacity was compared "to having a highway going into an alley."⁷⁹

The move towards liberalizing access to information technologies came from both domestic and foreign pressures. On the international stage, the Soviets signed the Vienna Concluding

no. 41 (1985), pp. 18-19.

⁷⁸ "Class Enemy: Photocopiers," *Index on Censorship* Vol 17, no. 2 (1988), p. 6.

⁷⁹ Joanne Levine, "Russia's Phones: Still Soviet," *The Moscow Times* (14 July, 1992), p. 6.

Document that came out of the 1988 CSCE round of talks. The document called on signatories to permit public access to machines that reproduce and distribute information (i.e., facsimile machines, copiers and PCs). Other commitments that had to be met by the Soviets, included: (i) to permit the use of cable and satellites between countries and to harmonize their technical standards and norms to facilitate international exchanges; (ii) to allow unimpeded the broadcasting of live radio and television programs from other countries; (iii) and to increase the number of 'telebridges'.⁸⁰

The Soviets also agreed to discontinue finally the jamming of Western radio broadcasts. The official explanation for the cessation of jamming was that it was no longer necessary because of the policy of glasnost. Still, Soviet authorities maintained that while foreign broadcasts were propaganda, they conceded that there was some element of truth to them.⁸¹

Domestically, Gorbachev sought to alleviate chronic shortages of certain goods and services. To this end, the State began to permit the operation of larger private cooperatives as directed by the USSR Law on Cooperatives (1987). On 31 December 1988, the government appended the Law with sections that defined activities that were prohibited by cooperatives. The amendment stated that all activities not explicitly prohibited were

⁸⁰ U. S. Congress, p. 7.

⁸¹ Vladimir, Ostrogorsky, "No More Jamming," *Moscow News* No. 51 (3351) (December 1989), p. 5.

permitted, thus restrictions on certain activities relating to information technologies were defacto lifted by this law.⁸²

One of the most notable changes was the lifting of the prohibition on the ownership, operation, and manufacture of photocopying\duplicating facilities. A company that quickly moved into this new area was the Canadian firm AlphaGraphics. The joint-venture provided duplicating, printing, and facsimile services in Moscow for hard currency.⁸³ Nevertheless, there were reports that the lifting of the prohibition on photocopying was far from universally applied. Most government institutions continued to guard their machines with the same overzealous vigilance.⁸⁴

Other activities related to information technologies remained prohibited under the Law on Cooperatives, however. For example, the production of "films and videos and organizing the exchange, sale, rental and public showing of films and videos" remained illegal.⁸⁵ The prohibition of video activity was left intact due to the rampant proliferation of Western and

⁸² "USSR Council of Minister's Resolution on Regulating Certain Activities of Cooperatives in Accordance with the USSR Law 'On Cooperatives in the USSR,'" *Izvestia* (Dec. 31, 1988) p. 2. Translated in *CDSP* Vol. XLI, no. 1 (1989), p. 10.

⁸³ V. Sukhoi, "Copy in a Minute," *Pravda* (October 5, 1988), p. 5. Translated in *CDSP* Vol. 40, no. 41 (1988), p. 21.

⁸⁴ Goodman (1990), ft. 10.

⁸⁵ *Ibid.*

pornographic films, and the black-market associated with video-related items.⁸⁶

Other industries prohibited by the Law on Cooperatives were those that dealt with the servicing of the state's communication systems. The prohibition included all aspects of television (transmission and cable equipment), telecommunications, and radio. Apparently, the State was still not prepared to surrender its monopoly over its most powerful and influential information technologies.

In 1989, the process of liberalizing access to information technologies continued further. In December 1989, the government announced that by June 1990 a law would be drafted to legalize the acquisition and installation of satellite antennas.⁸⁷ Later in the spring of that year, the Ministry of Communication and the US Postal Service concluded an agreement linking Moscow and twelve American cities by electronic mail. The Soviets expected, after working out technical problems, to expand the service within the USSR to include: Kiev, Minsk, Frunze, Sverdlovsk and Leningrad.⁸⁸

⁸⁶ E. Gonzalez, "What Can and Cannot be Done" *Izvestia* (January 2, 1989), p. 1-2. Translated in *CDSP* Vol. 41, no. 1 (1989), pp 10-11.

⁸⁷ M. Yusin, "Absurd Bans to be Lifted," *Izvestia* (December 6, 1989), p. 6. Translated in *CDSP* Vol. 41, no. 49 (1989), p. 32.

⁸⁸ V. Nevelsky, "Electronic Mail Between the USSR and U.S.," *Izvestia* (April 2, 1993), 1. Translated in *CDSP* Vol. 41, no. 13 (1989), p. 24.

Another significant development in 1989 dealt with the ownership and operation of duplicating machines. While the prohibition was defacto lifted by the Law on Cooperatives (1987), most institutions continued to operate as before. That year, however, the Ministry of Internal Affairs announced that it intended "to stop monitoring the acquisition, keeping, and use of duplicating (copying) equipment in the country."⁸⁹ The USSR Deputy Minister of Foreign Affairs, V. F. Petrovsky, went as far as to say that once the ban was formally lifted, Soviet citizens would legally be able to import and install photocopiers in their homes.⁹⁰

The change in policy was prompted by several new realities. First, there was an admission that despite custom prohibitions on duplicating machines, they were still being smuggled into the country. Furthermore, new information technologies, such as computers with printers, had made the prohibition 'superfluous'. Second, according to the Ministry of Internal Affairs, the ban on duplicating was a product of a bygone era where authorities wanted to prevent the duplication of 'undesirable' texts.⁹¹

Despite the positive pronouncements by the state concerning information technologies, there was still a serious deficit of domestically produced devices. The Politburo expressed concern about the lack of progress in producing adequate numbers of

⁸⁹ Mostovshchikov, p. 24.

⁹⁰ Yusin, p. 32.

⁹¹ Ibid., p. 25.

personal computers and other peripherals. The Politburo called on the top officials of various ministries "to eliminate their shortcomings in a very short time."⁹²

By 1990, Soviet authorities were permitting the use by private individuals of a wide range of information technologies, including: satellite TV aerials, photocopiers, fax machines, walkie-talkies and other communication devices.⁹³ The ban on the use of these devices was rescinded by various new laws. Moreover, their prohibition was made void when it was ruled that all unpublished enactments affecting individual rights were automatically invalidated.⁹⁴

The law "On the Press and Other Media of Mass Information (1 August 1990)," also marked a fundamental change regarding information technologies. While not dealing directly with information technologies, it had several repercussions. For example, Article 10 permitted the unregistered printing of publications if there were fewer than one thousand copies. This defacto decriminalized *samizdat* material and the means of publishing that material. Article 33 gave Soviet citizens the

⁹² "In the Politburo of the CPSU Central Committee," *Pravda* (March 25, 1989), p. 1-2. Translated in *CDSP* Vol. 41, no. 12 (1989), p. 24.

⁹³ "Miss Electronic and Other," *Business in the USSR*, (February 1990), p. 9. Changes can also be seen in Soviet advertisements, this edition of *Business in the USSR* features ads for photocopiers and PCs, clearly targeted for the Soviet market.

⁹⁴ Benn, p. 9.

right of access to information from foreign sources--including access to direct television, and radio broadcasts.

The Law on the Media also contained certain provisions to keep the 'information mediums' in check if they contravened provisions in Article 5 which forbade the publication of "state or legally protected secrets, appeals for the overthrow or alteration by force of the existing state or social system, the propaganda of war, violence, or racial, national, or religious intolerance."⁹⁵

During that same year, in order to make television and radio more democratic and pluralistic content to television and radio to reflect the changes occurring in the country, Gorbachev ordered by decree the decentralization of television and radio. The decree allowed for the establishment of new stations, or the renting of existing state facilities by public organizations and parties.⁹⁶

Despite the new political climate towards information technologies, practically none of the devices were mass produced in the Soviet Union, nor were they likely to be produced in the future. Expensive imports remained the sole source of the newer

⁹⁵ "Zakon Soyuza Sovetskikh Sotsialisticheskikh Respublik o pechati i drugikh sredstvakh massovoi informatsii (USSR Law On the Press and other Media of Mass Information)," *Vedomosti S'yezda narodnykh deputatov SSSR i Verkhovnogo Soveta SSSR*, no. 26, *Izvestia* (20 June, 1990), p. 3. The law appears in translation in *CDSP*, Vol. 42, no. 25 (1990), pp. 16-20.

⁹⁶ M. Gorbachev, "Decree of the President of the USSR: On the Democratization and Development of Television and radio Broadcasting in the USSR," *Izvestia* (July 16, 1990), p. 1. Translated in *CDSP* Vol. 42, no. 28 (1990), p. 13.

information technologies, thereby severely limiting access to these goods to government institutions, and members of the new economic elite (cooperative owners, entrepreneurs, etc.,).

CONCLUSIONS

Early Soviet policies towards information technologies were primarily designed to strengthen Bolshevik control over the means of communication. The strategy was to bombard the public with a singulary controlled message championing the Communist Party. The Bolsheviks also attempted to atomize Soviet citizens to prevent the communication of non-sanctioned information and to prevent the formation of anti-Bolshevik movements.

While Soviet authorities attempted to isolate their citizens, they made many policy errors that had the opposite effect. The case of the radio is a prime example. In the beginning, the Soviet pioneered a new type of radio system, fixed-wire, which effectively prevented foreign radio broadcast intrusion. However, with a lack of foresight they later allowed wave sets to proliferate. The costs of reversing the effects of this decision, which were never achieved, cost the USSR billions of rubles.

To maintain control over its Soviet citizens and to manage the increasingly complex state, Soviet authorities sought new types of information technologies. At the same time, they took measures to prevent public access to these technologies.

Authorities feared that new information technologies unleashed would erode the state's autarkical monopoly over information.

Despite the strengthening of vertical forms of information technologies, Soviet citizens exploited other technologies that allowed for better horizontal communication. The audio cassette recorder, the telephone, and camera were all used in ways contrary to the desire of the state. The production and dissemination of *samizdat* and *magnitzdat* could not have been fulfilled if not for information technologies.

Soviet efforts from Khrushchev-Chernenko to create a strong top-down communication system and their attempt to control access to information technologies, had a detrimental effect on the social, economic and political spheres of Soviet society. The result of these actions brought about the stagnation of all aspects of Soviet society, which was to last until the ascent of Mikhail Gorbachev.

Gorbachev's policies sought to address the problems created by his predecessors and their policies that stagnated Soviet society, particularly the economy. Gorbachev's policies were directed twofold: first, he attempted to 'awaken' Soviet society through the policies of *glasnost* in belief that a revitalized society was a requisite for economic growth; second, Gorbachev sought both large and small information instruments to prepare Soviet society for the 21st century.

Initially Gorbachev's policies sought to improve the information infrastructure of the Soviet Union, focusing on

technologies that can be easily monitored by the state (telephones, television). It was only after 1987 that Gorbachev began to make substantive policy changes that would allow Soviet citizens greater access to the newer types of information technologies. By 1990, practically all controls over information technologies were repealed.

CHAPTER THREE

THE LEVEL OF INFORMATION TECHNOLOGIES WITHIN THE USSR

This chapter aims to provide a general illustration of the qualitative and quantitative levels of information technologies in the USSR as of 1990. It is important to examine the levels of Soviet information technologies since a great deal of their influence was directly related to their quantitative and qualitative levels. Most of the new information technologies and the more significant old technologies will be examined. Figures regarding Soviet levels of information technologies are often contrasted with American levels, both countries have a similar population, in order to provide some comparative perspective. This chapter also surveys, in short measure, the technological and economic state of Soviet manufacturers of information technologies.

GENERAL LEVEL OF SOVIET INFORMATION TECHNOLOGIES

Since the mid-1970s the application of information technologies has broadened throughout the Western world entering into all aspects of daily life. From business to the home, information technologies became an omnipresent reality. This trend intensified further in the 1980s with the miniaturization of the computer chip. This development, and the intense

competition that arose between information technology manufacturers, led to a sharp reduction in prices, which further increased the proliferation of information technologies.

In contrast, the proliferation of information technologies in the USSR was substandard and sparsely distributed. By 1990, according to a Soviet specialist, the USSR was lagging behind the United States by more than ten years.¹ This deficiency ran through the whole range of information technologies, both old and new. To give two examples, in 1990 there were 81.3 television sets per one hundred persons in the United States, in the Soviet Union there were 35.6 sets. That same year, the U.S. had ninety-two telephones per one hundred persons, while the USSR had 14.2 phones.² The only information technology that the Soviets employed more than the West was the telegraph.

The lack of information technologies was particularly apparent in daily life. Even by 1990, most stores lacked automatic cash registers and relied heavily on the abacus for mathematical calculations. Automatic teller machines (ATMs) or computerized ticket machines were still years away because of the poor state of Soviet computerization and telecommunications. Essentially, it was rare to find a microchip inside of any Soviet civilian technology or consumer electronic good.

¹ Makarov, p. 30.

² Mikhail Glukhovsky, "Shrinking the Business World," *Delovye Lyudi* (May 1992), p. 76.

Of the old traditional information technologies, the most important was the telephone--the primary conduit of verbal and data communication. The telephone was also the main medium used to integrate various other communication technologies such as the facsimile machines, data banks, and personal computers.

By 1990 Soviet telecommunications lagged significantly behind the West both quantitatively and qualitatively, its poor condition being an incessant and chronic problem for the USSR. During the 1980s Soviet telecommunication services were on par with the services offered in the United States during the 1950s and Europe in the mid-1960s.³

In 1990 the Soviet Union had approximately twenty-five million civilian telephones, in contrast to 170 million in the less populous United States.⁴ The quantity of Soviet telephones amounted to roughly ten telephones per hundred citizens, compared to about sixty in Western Europe and virtually one hundred percent saturation in the U.S. and Canada.⁵ The lack of telephone service was particularly pronounced in rural areas where only thirteen percent of families had telephones compared to thirty-seven percent of urban households.⁶

³ Vera Shultseva "Russian Telephone: No Answer?" *Delovye Lyudi* (May 1992), p. 60.

⁴ Starr (1990), 40.

⁵ Dizard (1987), p. 24.

⁶ Makarov, p. 30.

The deficiency in the quantity of telephones and the strong demand for telephone service was evidenced by a backlog of more than ten million applications on the waiting list for residential telephone service.⁷ Depending on the region where one resided, it was reported that it took between four and twenty years before one's name reached the top of the installation list.⁸

To supplement the lack of individual telephones, the Soviets operated district telephone centres where inter-city and international calls could be placed. Despite the telephone centres, the level of services remained insufficient in relation to demand. In urban areas, telephone centres were characterized by long queues, while in rural areas where telephone centres were sparsely located, peasants often had to travel long distances to use telephone facilities.⁹

Besides a poor range of services, Soviet telecommunication technology, by Western standards, was technically obsolete. Some forty percent of Soviet telephone exchanges had been in operation for more than thirty years. Soviet switching technology relied heavily on old electromagnetic and crossbar switches that were replaced in the West decades ago by automatic and digital technology.¹⁰ In addition, twenty-five percent of phones did

⁷ Tolstov., pp. 21-22.

⁸ Robert M. Birkenes, "Telecommunications in the Soviet Union: The Role of Joint Ventures," *Report on the USSR* (10 August, 1990), pp. 5-6.

⁹ Dizard (1987), p. 29.

¹⁰ Whitlock (1992), p. 58.

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PM-1 3 1/4"x4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT

PRECISIONSM RESOLUTION TARGETS

not have direct dial capabilities and calls had to be routed manually by operators.¹¹

Another substantive problem for the Soviet telecommunication infrastructure was that as many as 6.5 million phones were on departmental subsystems and were not connected to the main Soviet telecommunication infrastructure. This problem was particularly prevalent in rural or provincial areas, and amongst Soviet academic and government institutions.¹²

By 1990 the Soviet satellite telecommunication network (*intersputnik*) was still in its nascent stage. In 1987 approximately three million voice circuit miles were carried by satellite in the Soviet Union.¹³ By contrast, in the West satellite communication was rapidly becoming the norm for all long-distance transmissions. Soviet domestic satellites were reported to have been less technically advanced than Western models and to have had less circuit capacity and fewer capabilities.¹⁴

A further handicap for the Soviet telecommunication infrastructure was its incapacity to handle rapid data transmissions, which was essential for Gorbachev's computerization program and modernization of the economy. In 1990, the Ministry of Telecommunications guaranteed high speed

¹¹ Goodman (1987), p. 531.

¹² Ibid.

¹³ Goodman (1987), p. 531.

¹⁴ Dizard (1987), p. 33.

services of up to 4,800 bits per second (bps) in its ordinary telephone services. However, William McHenry, a Western expert on Soviet technology, considered this figure as too high and that 2,400 bps was a more realistic number--a figure still far below western standards.¹⁵

Not surprisingly, with the poor quantitative and qualitative level of Soviet telephones, Soviet utilization of phone services was far below Western levels. In 1989, for example, 2.6 billion inter-city telephone calls were made in the USSR compared to forty-f . billion in the United States. Nevertheless, the number of Soviet inter-city calls made in 1989 was a substantial gain from a decade past when in 1970 only 431 million inter-city calls were made.¹⁶

For the Soviet Communist Party and government elite, there was an alternative telephone network run by the KGB. The purpose of this system was to provide high quality and protected lines of communication within Moscow, the republic capitals and other major cities (i.e., Leningrad and Kharkov). The system was composed of two automatic telephone exchanges (ATE1 and ATE2). The quantity of persons permitted access to the KGB network numbered about six hundred for ATE1 and six thousand for

¹⁵ Ibid., p. 31.

¹⁶ U.S Bureau of the Census, *USA/USSR: Facts and Figures*, U.S. (Washington, D.C.: Government Printing Office, 1991), Table 7.9.

ATE2.¹⁷ According to Ministry of Finance figures, the cost for maintaining the government network constituted five hundred million rubles.¹⁸ Besides the network designated for the government and CPSU elite, separate networks also existed for the KGB and the military.

The disarray in the Soviet telecommunication sector was a result of decades of under funding--less than one percent of the USSR's gross fixed investment on all public communication technologies. The poor state of Soviet telecommunications was also a result of import restrictions on advanced telecommunication equipment enforced during the Cold War by the seventeen member nations of the Coordinating Committee on Multilateral Export Controls (COCOM). With the demise of the Cold War, many of the West European nations favoured a liberalization of the import restrictions. However, the United States and Britain balked at the proposal. In June 1990, the United States and Britain refused to raise the data capacity guidelines on the sale of fibre-optic cables to the USSR.¹⁹

During the late 1980s the only significant improvement in Soviet telephone service came as a result of Western joint-

¹⁷ For complete details on the Soviet government's telephone networks see Alexandr Vetrov, "The Secret's Out," *Delovye Lyudi* (May 1992), pp. 64-65, and Vachnadze, pp. 402-405.

¹⁸ Vachnadze, p. 402.

¹⁹ John Markoff, "Soviet Fibre-Optic Deal Challenges U.S. Policy," *New York Times* (December 21, 1991), p. D4.

ventures.²⁰ While some of the joint-ventures were geared towards supplying telecommunication parts, most joint-ventures were concerned with providing high-end services (e.g. cellular and satellite phone systems, etc.) geared for foreign residents and the newly emerging business class. These services did not benefit the vast majority of citizens.

One of the most prominent of the new telecommunication joint-ventures was the firm Combellga. The joint-venture was a consortium of companies that included the Soviet firm Comincom, Moscow City Telephone, and the Belgian firms Alcatel Bell and RTT. Combellga had a cliental list of over two hundred subscribers, consisting mainly of diplomatic missions and foreign businesses. By 1991, Combellga had installed three local automatic switches in Moscow. The company, which only served the Moscow region, planned on expanding their services to the other major cities of the Soviet Union.²¹

Despite ambitious goals enacted to improve the Soviet telecommunication system (see Chapter 2) the prognosis for the system was mixed. Shortages of hard currency and COCOM restrictions prevented the Soviet government from acquiring the latest telecommunication technologies. Compounded by the

²⁰ In 1989, several Western firms entered into joint-venture arrangements to supply the Soviet market. The most important ventures include: LenBell Telfon (Bell Alcatel's joint venture with Leningrad's Krasnaya Zarya Factory and MKM Telekom (Siemens venture with the Koroleva Institute in Kiev).

²¹ Sergei Bek, "Combella--Gateway to the World," *Business in the Ex-USSR* No. 19 (January 1992), p. 45.

degradation of the Soviet economy, these problems limited the Ministry of Communication to undertaking maintenance work and to doing "patch-up" jobs on the existing telecommunication system.²²

The introduction of television within the USSR beginning in early 1950s was rapid and explosive. Television sets and broadcasting centres grew at a phenomenal rate. Expanding from three broadcasting stations in 1952 to 1,233 in 1970, by 1988 there were 8,828 stations throughout the Soviet Union. In human terms, in 1960 only five percent of the population were capable of watching television, whereas by 1986, ninety-three percent of the population had this capability.²³ The remaining seven percent of the Soviet population (approximately twenty million Soviets) without television were primarily representative of rural and remotely populated regions. Of those Soviets that received television signals, one in five received only one channel.²⁴

For television to bridge the vast areas and the eleven time zones of the Soviet Union, the government created a dense multi-tiered network of satellites.²⁵ Central television's first and

²² Shultseva, p. 61.

²³ Benn, 36.

²⁴ O. Mikheyev, "What's Behind the Screen," *Pravda* (8 June, 1986), p. 2. Translated in *CDSP*, Vol. 38, no. 23 (1986), p. 9

²⁵ See Ellen Mickiewicz's section on Soviet satellite television in *Split Signals* (New York: Oxford University Press, 1988), pp. 13-16.

second channels were broadcast by satellite throughout the USSR. While the satellite system satisfied the political objectives of the regime--the saturation of the entire population by centralized broadcasting²⁶--in other ways the system was not used to the same potential as in the West. Satellite broadcasts were primarily uni-directional in that broadcasts usually emanated from the central broadcast centre in Moscow to regional broadcast stations. The Soviets rarely conducted live interviews via satellite--a format frequently used by Western broadcast services.²⁷ The most apparent change in satellite television as a result of *glasnost* were the "telebridges" between Soviet and American citizens.

The production of television sets in the USSR grew quickly to match pace with the growth in the number of broadcast centres. Up until 1987 the majority of television sets produced in the USSR were black-and-white.²⁸ (see Table 3.1. and 3.2.) In 1988, television production reached 9.6 million units, of which 5.7 million of the sets were colour.²⁹ The following year, production increased only slightly. In 1990, production dropped to 7,766,200 units combined colour and black-and-white because of the turmoil created by Soviet economic reforms.

²⁶ Ibid., p. 14.

²⁷ Ibid., p. 9.

²⁸ U.S. Bureau of the Census, Table 4-8.

²⁹ "The Report on 1988 Plan Fulfilment," *Pravda* (January 22, 1993), pp. 3-5. Translated in CDSP Vol. 41, no. 4 (1989), p. 13.

The radio was one of the earliest information technologies distributed *en masse* to the Soviet people. The growth of radio driven by the Bolshevik policy of 'radiofication' was dramatic. In the year before Stalin's death there were only 17.5 million radios sets (wireless and wired) in the USSR,³⁰ by 1970 the number had risen to 94.8 million sets and by 1989 there were 202 million sets, with the ratio of wave to wired radio sets favouring the wired-systems (see Table 3.1 and 3.2).³¹

Audio-cassette recorders were of enormous popularity in the Soviet Union and they were both imported and manufactured domestically. Since the early 1960s, Soviet domestic manufacturers have produced over three million audio-tape recorders (the Yauza series) annually and that number had consistently improved over the years.³² The largest growth in tape recorders occurred during the 1980s when production jumped from approximately 1.2 million in 1980 to 5.7 million in 1989. In other terms, there were twenty-five tape recorders per one hundred families in 1980, by 1989 that number had doubled to fifty tape recorders per one hundred families (see Table 3.1 and 3.2).³³

³⁰ Starr (1990), p. 33.

³¹ U.S. Bureau of the Census, Table 7.9.

³² Roberts, p. 145.

³³ Theodore W. Karakaid and Alan Pollard, *USSR Facts and Figures Annual*, Vol. 17, (Gulf Breeze, Florida: Academic Press International, 1992), pp. 255-258.

In 1990, the number of personal computers\microcomputers in the USSR numbered between 200,000-500,000 (of that nearly three quarters were imports) compared to about twenty to fifty million PCs in the United States.³⁴ The vast majority of Soviet microcomputers were owned by state institutions and enterprises. In contrast to the few thousand of individually owned PCs in the USSR, approximately six million microcomputers were privately owned in the U.S.³⁵ Private ownership of microcomputers was still a rarity in 1990, although this was beginning to change.

By 1990, according to Soviet estimates, indigenous production of Soviet personal computers lagged behind the West by approximately fifteen years. In 1988-89, Soviet production of personal computers numbered 240, 600 units,³⁶ while the annual production level of microcomputers in the U.S exceeded five million units.³⁷

Despite large expenditures by the Soviet government to improve indigenous informatics industries, the quantity and quality of microcomputer manufacturing was predicted to decline in the future because of systemic problems plaguing the computer industry.³⁸ For example, the principal Soviet personal

³⁴ V. Makarov, p. 30.

³⁵ Balzer, p. 188.

³⁶ U.S. Bureau of the Census, Table 4.9.

³⁷ I. Adirim, "Current Development and Dissemination of Computer Technology in the Soviet Economy," *Soviet Studies* Vol. 43, no. 4 (1991), p. 662.

³⁸ *Ibid.*, p. 654.

computers, the ES-1842 and the Jstra-4816, experienced significant delays in their production, which were attributed to 'departmentalism' and the 'cumbersome' bureaucracy.³⁹ In contrast to Western personal computers, the circuitry and hardware of these 'top' two microcomputers were of inferior quality making them unreliable. Many of the computers were defective upon their purchase,⁴⁰ and one-quarter of the computers needed to be repaired before their warranties expired.⁴¹

The lack of domestic production was saved, to some degree, by a strong growth of information technology joint-ventures. In mid-1990, there were about one hundred joint-ventures active in the information technology field in the USSR. Many were involved in the importation and servicing of Western microcomputers and software. Many of the businesses produced clones of Western microcomputers from imported Western components. Retail stores dealing in computers have appeared in most major cities. In Moscow, computer flea markets appeared where entrepreneurs would peddle home-made modems, circuit boards, and even completed PCs made, literally, on the kitchen table.⁴²

³⁹ Ross Stapleton and S. Goodman, "The Soviet Union and the Personal Computer Revolution," in Richard F Starr ed., *The Future Information Revolution in the USSR*, (New York: Crane Russak & Co., 1988), pp. 64-71.

⁴⁰ Michael Rogers and C. Bogert, "Red Hackers, Arise!" *Newsweek* (20 March, 1989), pp. 58-59.

⁴¹ Adirim, pp. 660-661.

⁴² Jeff Sallot, "The only thing holding back software sales is a shortage of boxes," *Globe & Mail*, (May 3, 1990), p. A22.

Soviet authorities also increased the number of personal computers through importing low quality and low cost microcomputers from abroad. During 1987-1988, the Soviets imported 100,000 microcomputers from Japan.⁴³ Imports were estimated to represent forty percent of personal computers in the USSR, and that percentage was growing steadily. According to a Western expert on the Soviet computer industry, the Soviet market was estimated to be worth a half billion dollars,⁴⁴ or roughly ten million microcomputers.⁴⁵ The Soviet government estimated that the country could absorb three times that number of personal computers.⁴⁶

In the field of software, the Soviet Union generally fared better. There was an abundance of qualified programmers and designers of software in the USSR, many of whom were considered amongst the 'best and brightest' in the world. Indeed, Soviet software was being sold to the West for use in industry and entertainment. The copyright for the Soviet video game *Tetris*, designed by Aleksei Pazhitnov, was sold to a games manufacturer in the West where it then went on to sell more than 100,000 copies.⁴⁷

⁴³ Roberts, p. 150.

⁴⁴ Adirim, p. 662.

⁴⁵ Ibid., ft n. 30.

⁴⁶ Philip Elmer-DeWitt et al., "In Search of Hackers," *Time* (10 April, 1989), p. 95.

⁴⁷ Rogers, p. 58.

Despite Soviet achievements in the software industry, there remained many difficulties within that industry. Perhaps the greatest failure of the Soviet software industry was due to factors related to central planning where software had traditionally been undervalued by Soviet Gosplan planners. Unlike most commodities, software had no tangible units to measure its value. In a system that had always based a commodity's value on measurements such as the kilograms, or litre, the value of software was difficult to define.⁴⁸

The lack of economic value placed on software resulted in several systemic obstacles for Soviet programmers. The first was poor compensation for their work since there was little incentive (nor mechanisms) for them to market their software programmes. This in turn meant that software was often reinvented over-and-over by individual institutions and programmers. The lack of market coordination also meant that there were numerous programming languages that were not linked by translator programs.⁴⁹

Another principal problem in the Soviet software sector was a lack of laws regarding the protection of copyright and software piracy. Officially, software piracy did not exist because the copying of software was not illegal. Amongst domestic producers of software this meant that their programmes were usually copied

⁴⁸ Judy, p, 6.

⁴⁹ "The Catalysts of Progress," *Pravda* (August 18, 1985), p. 1. Translated in *CDSP* Vol. 37, no. 35 (1985), pp. 24-25.

numerous times without any compensation and they had no legal recourse.⁵⁰ This situation created disincentives for programmers to invest their time or energy into creating new programs.

The compounding of all the above noted problems led to a decline in production and sales of Soviet domestic software. Many Soviet computer dealers switched to selling only Western software (e.g., Lotus, Microsoft) because the programs were better marketed, more user-friendly and time-tested. By 1990, Western software companies had virtually captured the Soviet market for word-processing, spreadsheet, and data base programs.⁵¹

In sharp contrast to developments in the West during the 1980s, Soviet computer networking grew at an abysmally low rate. By 1990 there was only one system operating throughout the USSR.⁵² That system (Akademset) linked the institutes of the Academy of Sciences in three cities--Novosibirsk, Leningrad and

⁵⁰ For discussions of problems that faced Soviet software designers see, Igor Agamirzian, "Computing in the U.S.S.R.," *Byte* Vol. 16, no.4 (April 1991), pp. 128-129. And "Lexicon and Master Enter Computer Market," *Moscow Business Weekly* no. 16 (9 July, 1992), p. 1.

⁵¹ Sergei Savinov, "Software Looks for Friendly Users," *Delovye Lyudi* (April 1993), p. 72.

⁵² In contrast, within the United States, four-fifths of U.S. companies had internal electronic mail systems. There were about 40 million active users of electronic mail in the U.S. Additionally, there existed about 3,500 databases and 650 bulletin boards that were readily accessible to the public. William K. McHenry, "Computer Networks & the Soviet-Style Information Society," in *The Future Information Revolution in the USSR*, ed., R. Starr (New York: Crane Russak & Company, 1988), p. 103.

Moscow.⁵³ While other computer network systems existed, they were local area networks (LAN) that principally linked government offices in one city. These networks in comparison to Western LAN systems were rudimentary.⁵⁴

The gross underdevelopment of computer networking was a direct consequence of a lack of modems and the poor state of the telephone system, which made data transmission problematic (see the section above on telephones).⁵⁵ The telephone lines linking the three cities for the Academy of Sciences system (Akademset) were specially designated lines that were capable of handling larger data transmissions.

Future expansion of data networks in the USSR and integration with Western networks was generally viewed positively. In 1989 an agreement was concluded between the United States Postal Service and the USSR Ministry of Communications to link twelve U.S. and Moscow by electronic mail with connections to other Soviet cities planned in the future.⁵⁶ Progress on the Soviet side depended on whether the Soviets continued to improve their telecommunications systems, and continued adherence to international technical standards and norms.

The facsimile machine is amongst the newest of information technologies. Its use has rapidly grown inside the Soviet Union,

⁵³ Starr (1990), pp. 34-35.

⁵⁴ McHenry, pp. 86-89.

⁵⁵ Ibid.

⁵⁶ Nevelsky. p. 24.

especially amongst government institutions and businesses. By 1990, the fax machine was not yet in production in the USSR. Consequently, the Soviet Union relied exclusively on imports of the machines for the domestic market.

By 1990 there were approximately twenty copiers per million persons in the USSR as compared to sixty per million in Africa and 4500 in the USA. The Soviet Union only produced about one thousand photocopiers per year from a single factory and imported a few hundred more.⁵⁷ In contrast, Japan was producing about 1.5-2.0 million photocopiers annually.⁵⁸

⁵⁷ Alan P. Pollard, *USSR Facts and Figures Annual*, Volume 12 (Gulf Breeze, FL.: Academic International Press, 1988), p. 468.

⁵⁸ "Class Enemy: Photocopiers," *Index on Censorship* Vol. 17, no. 2 (1988), p. 6.

TABLE 3.1.--GROWTH OF INFORMATION TECHNOLOGIES (millions)

INFORMATION TECHNOLOGY	1950	1960	1970	1980	1989
WAVE RADIO SETS (mn)	3.6	27.8	48.6	68.0	84.8
PER 1,000 PEOPLE	20.2	13.1	199.3	281.3	295.7
WIRED RADIO OUTLETS (mn)	9.7	30.8	46.7	81.6	117.2
PER 1,000 PEOPLE	54.3	147.5	193.1	312.7	408.7
TELEVISION SETS (mn)	0.01	4.8	34.8	67.0	92.4
PER 1,000 PEOPLE	0.06	22.6	149.9	257.0	322.2
TELEPHONES	NA	NA	NA	11.8	27.66
PER 1,000 PEOPLE	NA	NA	NA	46.0	100.3
VIDEO CASSETTE RECORDERS	NP	NP	NP	NA	0.3
PER 1,000 PEOPLE	NP	NP	NP	NA	1.04
PERSONAL COMPUTERS	NP	NP	NP	NA	0.2-0.5
PER 1,000 PEOPLE	NP	NP	NP	NA	1.22
FAX MACHINES	NP	NP	NP	NP	NA
PER 1,000 PEOPLE	NP	NP	NP	NP	NA
PHOTOCOPIERS	NP	NP	NA	NA	1.28
PER 1,000 PEOPLE	NP	NP	NA	NA	4.4
TAPE RECORDERS	NA	NA	NA	24.0	32.0
PER 1,000 PEOPLE	NA	NA	NA	91.4	111.6

Sources: U.S. Bureau of the Census, *USA/USSR: Facts and Figures*, U.S. Government Printing Office, Washington D.C., 1991, and *USSR Facts and Figures*, Volumes 12 & 17, Academic International Press: Gulf Breeze, FL., 1987 & 1992, and Gayle Durham Hannah, *Soviet Information Networks*, CSIS Publications: Washington D.C., 1977. Population figures from Paul E. Lydolph *Geography of the U.S.S.R.* 5th ed., (Misty Valley Publishing: Elkhart Lake, WI., 1990), p. 129.

NP--Not Produced

NA--figures Not Available

TABLE 3.2.--USSR PRODUCTION OF INFORMATION TECHNOLOGIES,
1970- 1989 (thousands)

INFORMATION TECHNOLOGY	1970	1975	1980	1985	1989
RADIO SETS	7,815	8,376	8,476	8,849	8561
TELEPHONES	NA	NA	NA	NA	NA
TELEVISIONS	6,682	6,960	7,528	9,371	9,938
COLOUR	46	589	2,262	4,024	6,341
B&W	6,636	6,371	5,266	4,024	3,597
PERSONAL COMPUTERS	NP	NP	NP	8.8	240.6
VIDEO CASSETTE RECORDERS	NP	NP	NP	6.8	125.0
PHOTOCOPIERS	NA	NA	NA	1.0*	1.0*
FACSIMILE MACHINES	NP	NP	NP	NP	NP
TAPE RECORDERS	1,192	2,525	3,045	4,665	5,713

Source: U.S. Bureau of the Census, *USA/USSR: Facts and Figures*, U.S. Government Printing Office, Washington D.C., 1991, and *USSR Facts and Figures*, Volumes 12 & 17, Academic International Press, Gulf Breeze, FL. 1987 & 1992.

*Estimated

NP--Not Produced

NA--figures Not Available

THE SOVIET INFORMATION TECHNOLOGY INDUSTRY

The manufacture of civilian information technologies was traditionally a subsidiary task of heavy industry or enterprises engaged in the defense sector. Until 1990, these industries accounted for 96-100 percent of the USSR's output of televisions, radios, and tape recorders.⁵⁹ There were very few enterprises

⁵⁹ Alexandr Androshin and Olga Frolova, "An Electrifying Future," *Business in the Ex-USSR* No. 19 (January 1992), p. 28.

whose sole function was to manufacture information technologies for the civilian market.

With the peace dividend, high expectations were placed on the conversion of defense industries to civilian production to help satisfy the strong demand for consumer electronic goods. Defense industries were seen as the best choice since they had a high quality workforce, the best industrial equipment, and were accustomed to higher quality production standards. As defense contracts were slashed by up to seventy-five percent, enterprises, such as the massive conglomerate Vympel, which employed over twenty thousand engineers and technicians were forced to seek alternative ventures. Vympel converted to the production of telecommunications and information systems that could be marketed to the civilian market.⁶⁰

By 1990 domestic production of information technologies remained marginal. Since the conversion process began in 1988, approximately four hundred defense firms and two hundred research institutes had switched to civilian production.⁶¹ The switch inevitably supplied the domestic market with more electronic products. According to Soviet statistics, consumer production in

⁶⁰ Sergei Protasov, "Vympel: Turning Over a New Leaf," *Delovye Lyudi* (April, 1993), p. 24.

⁶¹ Karen Ballentine, "Soviet Defense Industry Reform: The Problems of Conversion in the Unconverted Economy," *Canadian Institute for International Peace and Security Background Paper*, No. 36 (1991), p. 2.

1990 increased by 4.4 percent. Nevertheless, Soviet industries still failed to meet even half of their assigned targets.⁶²

Moreover, despite the higher quality of products produced by defense industries, Soviet information technologies remained largely inferior compared to their Western counterparts. For example, in 1988, one television set in four was returned to its manufacturer for major repairs during the first year after purchase.⁶³ Poor quality-control resulted in a high number of electrical fires. Soviet statistics claim there were 11,760 reported television fires in 1990, resulting in 8,945,928 roubles of damage and 285 deaths.⁶⁴

Soviet information technologies also lacked many of the attributes of their Western counterparts (e.g., user-friendly features, guaranteed warranty, and a repair service base).⁶⁵ Growth in these areas was slow due to the primitive service infrastructure and a poor comprehension of service based industries.

Soviet manufacturers were also at a disadvantage when it came to marketing and advertising. In the past, Soviet manufactures were only responsible for fulfilling their production quotas, and were not responsible for marketing their

⁶² Ibid., p. 3.

⁶³ Vachnadze, pp. 368-369.

⁶⁴ U.S. Bureau of the Census, pp. 254-255.

⁶⁵ Alexandr Androshin and Olga Frolova, "When the Joy of Purchase is Short-Lived," *Business in the Ex-USSR* No. 19 (January 1992), pp. 31-32.

products. Strong public demand for consumer electronics often meant that goods were sold regardless of their quality. By 1990, however, when practically any Western information technology was available, Western equipment was preferred. The sole salvation for Soviet enterprises was the high consumer demand for consumer electronic goods and the high cost of Western imports, which most Soviets could not afford.

Future prospects for the information technology sector in the Soviet Union were grim. Shortages in parts, resources, and capital for research and development were becoming the norm as the government slashed subsidies for industries. Defence industries that were the traditional incubators of new technologies were not spared the government cutbacks. While some Soviet analysts advocated that technology projects be financed by investment banks and other capital investment mechanisms, by 1990, none of these services existed nor did they seem likely to materialize in the near future.⁶⁶

In contrast to problems in state sector, prospects in the new private sector were much brighter. After the enactment of the Law on Cooperatives (1988), there was a steady growth in high-tech businesses that specialised in consumer electronics and information technologies. While the majority dealt with the retail aspect, there were many small cooperatives that assembled and sold computers made from Western parts. One of the most prominent and profitable computer cooperative was the firm

⁶⁶ Gvishiani, pp. 34-35.

Tekhnika, which sold millions of rubles of computer hardware and software to state enterprises and organizations.⁶⁷ Of the fifty largest joint-stock registered companies, three were computer or information-related companies.⁶⁸

CONCLUSIONS

Throughout the 20th century the Soviet Union made enormous strides in building a complex and multi-faceted communication system, especially in light of the enormous size of the country. The Soviets did especially well in the large and centralized information technologies that were beneficial for vertical control. The administrative-command system needed only the type of information environment that ensured receiving commands from above and transmitting them downwards.

With the advent of the smaller and increasingly personalized technologies, the Soviets fared less favourably. Soviet designers and manufacturers could not equal the West in regards to technical design and production standards, especially in the area of microelectronics and computerization. There existed many systemic problems that obstructed progress in the field of electronics: (i) a planning system that did not effectively gauge

⁶⁷ Darrell Slider, "The First Independent Soviet Interest Groups: Unions and Associations of Cooperatives," in *Perestroika from Below*, J. Sedatis and J. Butterfield (Boulder Co. Westview Press, 1991), p. 151.

⁶⁸ Larisa Korobkova, "Joint-Stock Societies, Soviet Style," *Dolovie Lyudi (Business in the USSR)*, No. 15 (September 1991), pp. 16-21.

the value of technological goods; (ii) a quality control regime that could not ensure the high level of quality demanded in the new information technologies; (iii) inadequate copyright laws; and (iv) a poor knowledge of marketing and service amongst Soviet manufacturers in contrast to Western firms.

As a result of the problems in manufacturing and design of advanced microelectronics goods, Soviet citizens came into far less contact with the new technologies that were becoming omnipresent in the West. Moreover, the growth of many of the new advanced technologies was hindered by the poor state of the information and technological infrastructure of the USSR. Without proper telephone switches and lines, many of the new technologies such as facsimile machines, computers connected via modems, and data bases could not be fully exploited.

CHAPTER FOUR
THE SOCIAL IMPACT OF
INFORMATION TECHNOLOGIES

Two Soviet men looking at a computer displayed in a store window.

Man 1. "How much do you think that computer would cost me?"

Man 2. "Oh, I'd take a rough guess at two to five years."

Information technologies have fundamentally altered the Soviet social and political fabric. While the process of social-political change had rapidly evolved under Gorbachev's policy of glasnost, the transformations were an incessant phenomenon since the death of Stalin (as seen in Chapter Two). Since 1985, the rapid growth and application of information technologies and the concomitant policy of glasnost had set the USSR on a course towards a more liberalized, and pluralistic polity.

This chapter seeks to examine several important issues and questions relating to information technologies and Soviet society: First, it examines the affect information technologies had over the state's control and influence over the individual; second, the influence and impact of foreign information received via information technologies will be examined; third, the role information technologies played in undermining official Soviet 'culture' will be discussed; and finally, the impact information technologies played in the evolution within Soviet society away

from its traditional vertical communication paradigm towards a more multi-directional model will be scrutinized.

This chapter also includes a section that surveys the various groups that utilised and had contact with information technologies. It also discusses the change between 1985-1990 in the criterion required for access to information technologies. Finally, the section looks at the motivations and reasons amongst the various groups for wanting to use and own information technologies.

CONTROL OR FREEDOM

A great theoretical debate of our time has been over the issue of whether information technologies increase control over or inversely inform the individual. Some theorists had argued that the new technologies would make centralized and bureaucratic control over the individual possible, thereby destroying all privacy and bringing Orwell's nightmare to realization. Others had argued that information technologies were a panacea that would intellectually and politically liberate the individual. Experience thus far had proved it to be a little of both. By 1990 in the West there were a myriad of data banks that contain information on each individual, there were also a multitude of computer bulletins and software programs that have rapidly expanded the amount of information at our fingertips.

Due to rapid innovations in data storage, retrieval and analysis during the 1980s, it had become economically and

technically feasible for both large and medium sized institutions to maintain data bases containing the records of millions of individuals (see Table 4.1). In the West, the amount of personal information that was held in data bases was astounding. The data bases of the five largest insurance companies were reported to contain the records of 150 million persons.¹

Table 4.1.--TYPES OF INFORMATION THAT ARE HELD IN GOVERNMENTAL AND NON-GOVERNMENTAL DATA BASES.

GOVERNMENTAL	NON-GOVERNMENTAL
<ul style="list-style-type: none"> • vital statistics (birth, marriage, death) • education records • employment records • welfare and social assistance records • medical history (physical and mental) • internal revenue (earnings, and taxes) • passport • military service • criminal records • motor vehicle record 	<ul style="list-style-type: none"> • telephone records • bank transactions • travel tickets • credit card purchases • membership in organizations and activities • medical records • dating services • employment records • insurance records

The vast amounts of information held in data banks was particularly dangerous because of advances in technology and software that made it possible for computers to communicate with one another. Information from one data bank could be instantaneously correlated and cross-referenced with other data

¹ Tom Forester, *High-Tech Society* (Cambridge: MIT Press, 1987), pp. 268-269.

banks using a selected key word (e.g., social insurance number or family name). Moreover, data from various data banks could be used to establish an approximate day-to-day record of an individual's movements.² As a result of these developments, proprietors of data banks had at their means greater quantitative and qualitative information on each individual, which reduced the citizen's privacy and subjected them to new forms of public and private scrutiny.

This ability of the state to monitor its citizens was fraught with dangers had the data been misused or not kept secured. The United States government was reported to have seventeen items of information for every man, woman and child.³ Personal information on an individual's health and financial status if accidentally or deliberately leaked could have had serious repercussions for the individual.

On the positive side, the state could have utilized information gathered in data banks for progressive social planning. For example, the state could have employed statistical data to accurately plan and forecast the need for social programs thereby maximizing budgetary expenditures. Social statistics told the government a great deal about society, such as birth and mortality rates, incidence of disease and the national economic situation.

² Ibid.

³ Ibid.

Fortuitously, the Soviet citizen did not, yet, have to worry about a high-level of computer surveillance due to the sheer backwardness of the USSR in respect to information technologies and a lack of data entry points.⁴ However, this did not mean that the Soviet citizen was immune from electronic surveillance. Soviet authorities made up qualitative deficiencies quantitatively. The Soviet security apparatus was suspected of having in place a wide ranging system of communication and control technologies to monitor its citizens; the technologies presumed used by the KGB and MVD included telephone monitoring, eavesdropping equipment and centralized data bases.⁵

KGB monitoring of both domestic and international telephone calls had long become a accepted reality in the USSR.⁶ Solzhenitsyn's novel *First Circle*, traced the development of a voice-identification device that could scientifically identify an

⁴ Ironically, the poor Soviet state of the information infrastructure also protected the state from computer hackers who could have raided government data banks for confidential information. Rogers, p. 59.

⁵ Goodman (1990), pp. 51-52.

⁶ The monitoring of Soviet telephones by Soviet authorities was seen by its citizens as a fact of life. Soviet telephone surveillance spawned many popular jokes:

Two friends meet on the street.

--Man 1. How are you, how's everything?

--Man 2. Not bad at all. I've got a good job and a nice position in the Party, my wife has a good job, my kids are in school and active in *Komsomol*...

--Man 1. Say, What do you think you are doing? Are you talking to me in person or over the phone?

C. Banc and Alan Dundes, *You Call this Living? A Collection of East European Political Jokes*, (Athens: University of Georgia Press, 1990), p. 25.

individuals voice pattern. Whether the Soviets actually had such a device is unknown, but it is known that the Soviets maintained an effective telephone tracking system called 'centralized automatic management accounting' (CAMA) that recorded the caller and the number called, and stored that information in data banks for future reference.⁷ The Soviet security agencies, like the U.S. National Security Agency, were also suspected of having used computerised telephone technology that could simultaneously monitored thousands of calls. The system by picking out key words that may have reflected a political conversation would then tape the entire call for later analysis.

During the 1980s, with the advances in miniaturization of computer technology and data storage, the state security apparatus had at its disposal numerous new technologies to keep tabs on individuals and groups. Eavesdropping and spying equipment became so compact as to be virtually undetectable to the naked eye. The KGB was infamous for its ingenious methods used in planting eavesdropping equipment. The KGB was also suspected to possess large data bases and computer networks for the purpose of monitoring Soviet citizens.⁸

The centralized and hierarchical character of Soviet information technologies also simplified surveillance by the government. Unified data bases and telecommunication facilities provided quick and easy access to information and controls. In

⁷ Dizard, p. 27.

⁸ Goodman (1990), p. 51.

1988, it was reported in a samizdat journal that at the Moscow telephone exchange technicians had begun work that made it possible to disconnect ninety percent of private telephones "in case of an emergency," leaving a selected list of telephones operating.⁹

In later years, the absolute volume of telecommunication messages made it increasingly difficult for the KGB to monitor both domestic and international telephone calls.¹⁰ This was especially true with arrival in 1988 of Western telecommunication companies (e.g., Combellega, Sprint and Comstar) that relied on satellite and fibre optics. These technologies were very difficult to tap undetected.

Despite some growing difficulties in telephone and computer surveillance in the Soviet Union there were still those that, nonetheless, openly worried about domestic spying. In the late 1980s, when the ideas of individual rights began to be openly discussed in Soviet theoretical journals, there were Soviet academics who worried about how information technologies might endanger the privacy of the individual. These authors argued that the only solution to prevent abuse was "through the establishment and strengthening of a law-governed state."¹¹

⁹ Reported in Brovkin, p. 248.

¹⁰ U.S. Directorate of Intelligence, *The USSR Confronts the Information Revolution*, SOV 87-10029 (May 1987), p. 14.

¹¹ Gvishiani, p. 34.

SOCIAL INDIVIDUALIZATION

With the growth of information technologies in the 1980s, the citizen was presented with unprecedented new tools that promoted social individualization. While the old traditional information technologies were oriented towards institutions and groups, many of the newer technologies were oriented towards the individual. These technologies "not only privatize[d] communications but individuate[d] the communicators,"¹² providing individuals with more information, which broadened their parameters of options and enabled them to make better informed decisions. They also allowed individuals to perform a multitude of activities that could not be monitored easily by the state.

Within the Soviet Union, the spread of information technologies slowly began to foster social individualization. In the past, Soviet citizens were relegated, by lack of choice, to watching the same television programs or listening to the same radio stations (see Figure 4.1.). With the expansion of information technologies, unprecedented opportunities emerged that allowed individuals to make personalised choices regarding the programs they wished to view or hear. For example, the VCR allowed Soviets to watch non-sanctioned programs, and the short-wave radio made it possible to listen to foreign broadcasts.

¹² Starr (1990), p. 43.

Figure 4.1.--COMMUNICATION MODEL OF A VERTICAL SOCIETY

Beyond expanding individual choices, new information technologies privatized many aspects of the information experience. Watching a film in a theatre limited the viewers responses to what they were viewing. Seeing the same film at home on television allowed the individual to react or comment in a way that might not otherwise be tolerated by authorities.¹³ With the advent of the VCR, the individual went a step further by deciding what to watch and when to watch it.

The privatization of information was also interactive. A Soviet individual with a personal computer could accumulate vast amounts of data, process that data, and generate an output that was wholly their own. Individuals with a microcomputer could write novels or pamphlets critical of the government. Some of the

¹³ Starr (1990), pp. 43-44.

newer computer hardware and software made it possible for individuals to scan and alter photographs. All of these and many other similar activities undermined the Soviet states dominance over the processing and output of information.

INTERNATIONALIZATION OF INFORMATION

In a 1989 speech in London, former U.S. President Ronald Reagan addressed the topic of information technologies and their impact upon closed societies. Reagan praised the new technologies as "the greatest force for the advancement of human freedom the world has ever seen." Furthermore, Reagan stated:

The biggest of big brothers is increasingly helpless against communications technology. Information is the oxygen of the modern age. The peoples of the world have increasing access to this knowledge. It seeps through the walls topped with barbed wire. It wafts across the electrified, booby-trapped borders.¹⁴

By all accounts, both Soviet and Western, Ronald Reagan was right in his observation of global communication.

From the onset of the Cold War, the Western nations directed high power transmitters towards the Soviet Union and her allies. Even worse, the peripheral states of the Soviet Empire and parts of the Baltic Republics were penetrated by West European television, which not only discussed an alternative way of political, social and economic life, but provided pictures. The

¹⁴ Quoted in Donald Wilhelm *Global, Communications and political Power*, (Transaction Publishers: New Brunswick N.J., 1990), p. 140.

Soviet effort to create a hermetic society was fraught with perforations.

Western radio transmissions had a significant impact upon Soviet society. The broadcasts provided an alternative to the officially sanctioned view of domestic and foreign events. A comprehensive survey carried out in Byelorussia in 1985 and again in 1987 found that 63% and 83% of the respective respondents listened to Western radio broadcasts. One quarter of the listeners tuned in to Western radio broadcasts daily or several times a week; more than one-third listened an hour or more a day.¹⁵ Clearly, listening to Western broadcasts was a mass phenomenon amongst Soviet citizens.

Besides quantitative listening habits, the same survey examined whether listeners to Western radio had confidence in the accuracy of what they heard (see Table 4.2.). The survey found that there was a high degree of consensus with the Western programs especially amongst listeners who 'usually trust' and 'sometimes trust' Western broadcasts.¹⁶ Conversely, the study

¹⁵ The 1985 survey sampled two thousand people between the ages of 16 and 30 who belonged to Belorussia's five main social groups (i.e., workers, collective farmers, employees, engineers and technicians, university students, and students of secondary and vocational schools). The identical survey conducted in 1987 sampled eight hundred students from higher, secondary and vocational institutions. Oleg Manaev, "The Influence of Western Radio on the Democratization of Soviet Youth," *Journal of Communication* 41(2), (Spring 1991), pp. 72-73.

¹⁶ The findings of the Soviet survey concur with similar studies conducted by Radio Free Europe and Radio Liberty. See the findings from the Audience Research Department of Radio Free Europe-Radio Liberty. In addition, many Soviet media specialists

found that listeners who had strong confidence in Western radio, were likely to be critical of Soviet mass media.¹⁷

TABLE 4.2.--PERCENTAGE OF YOUNG PEOPLE AGREEING WITH WESTERN RADIO PROGRAMS, BY THEIR DEGREE OF CONFIDENCE IN THEM

Confidence in Western radio programs	Agreement with Western radio programs		
	Usually agree %	Sometimes agree %	Usually disagree %
Usually trust	40.6	4.1	3.3
Sometimes trust	50.0	75.0	24.8
Usually distrust	9.4	20.9	71.9

Source: Oleg Manaev, "The Influence of Western Radio on the Democratization of Soviet Youth," *Journal of Communication* 41(2), (Spring 1991), p. 76.

In 1985, more than eighty-five percent of respondents who listened to Western radio with any regularity claimed that they learned new facts from the programs (see Table 4.3.). By 1987, the figure was ninety-seven percent. This was very significant, since social psychologists had noted that new information was an important factor in forming opinions on particular issues. When new facts were learned and interpreted, they tended to be

acknowledged the creditability level of Western radio within Soviet society, see the round-table discussion in the article "The role of the Media In Political and Economic Change, *RFE/RL* Vol. 3, no. 43, (1991), pp. 1-6.

¹⁷ Ibid., pp. 81-84.

assimilated more deeply and quickly, which made it more difficult for Soviet authorities to counteract the information.¹⁸

TABLE 4.3.--PERCENTAGE OF YOUNG PEOPLE WHO LEARN SOMETHING NEW FROM WESTERN RADIO PROGRAMS, BY THEIR DEGREE OF CONFIDENCE IN THEM

Learn something new from Western radio programs			
Confidence in Western radio programs	often %	seldom %	never %
Usually trust	9.5	2.0	5.0
Sometimes trust	59.5	60.5	35.0
Usually distrust	31.0	37.5	60.0

Source: Ibid., p. 77.

Ironically, glasnost further helped the confidence factor listeners had in Western radio since many of the pronouncements made by Western broadcasts were later confirmed in the Soviet press as being accurate. As well, many of the works of Soviet literature that were banned in the USSR prior to glasnost (e.g., Grossman, Bulgakov, Pasternak, etc.,) as 'anti-Soviet, but played by Western radio, were later warmly embraced by Soviet radio.¹⁹

¹⁸ See S. Nadirashvili, *Psichologia Propagandi* [Psychology of Proaganda]. (Tbilisi: Metsniereba, 1979). and Ellen Mickiewicz, *Split Signals: Television and Politics in the Soviet Union*, (New York: Oxford University Press, 1988), pp. 219-220.

¹⁹ Manaev. pp., 84-85.

Consequently, the enthusiasm for Western radio had waned little despite *glasnost*.²⁰

The study also demonstrated through a series of questions designed to judge social values that regular listeners of Western radio rejected values promoted by the Party--e.g, anti-materialism and collectivism.²¹ It also found an inverse relationship between those that had confidence in Western radio broadcasts and their participation in *Komsomol* and other party activities; the greater the confidence in Western radio the less active the respondent was in participating in party activities and vice versa.²²

The influence of Western radio also went beyond merely providing information and undermining confidence in the Soviet regime. Western radio also provided a forum and voice for alternative or disfranchised groups living outside the Soviet Union. One Soviet media analyst designated the émigré journalists working for Radio Free Europe as the 'official opposition.' Moreover, he claimed that the émigrés "furthered and strengthened the influence of anti-communists, nationalists and other reformers" within the Soviet Union.²³ In the early days of *perestroika*, even the reform-minded people's deputies, who were not featured on the still then conservatively-run state media

²⁰ Ibid., p. 85.

²¹ Ibid., pp. 81-82.

²² Ibid., pp. 78-81.

²³ Vachnadze, p. 275.

"came to regard Radio Liberty as the best medium for having their views disseminated in the USSR."²⁴

The effects of international information within the Soviet Union were likely to continue long into the future. Trans-national communication and the sharing of news items and information between countries was perhaps the most predominate communication trend during the 1980s. This trend did not exclude the USSR. In November, 1989, Gosteleradio signed an agreement with CNN, which provided for the broadcasting of CNN International reports in the Soviet Union.²⁵ By 1990, the Soviets were receiving Western information via radio, video cassettes, telephones, facsimile machines, electronic computer bulletins, and satellite dishes.

UNDERMINING 'SOVIET' CULTURE

Information technologies played an integral role in facilitating the erosion of official Soviet 'culture.' Until recently, Soviet culture was defined by the CPSU and supervised by the Ministry of Culture and Glavlit (the Main Directorate for the Protection of State Secrets). Through its State agencies, Gosteleradio, Goskino, Goskomizdat, and their sub-units, they controlled all Soviet production, recording and studio

²⁴ Sergei Korzun in "The Role of the Media in Political and Economic Change", *RFE/RL* Vol. 3, no. 43 (25 October, 1991), pp.3-4

²⁵ "CNN comes to Moscow," *Scvetsky Kultury*, (November 21, 1989). Translated in Vachnadze, pp. 361-364.

facilities. Only officially sanctioned works could be produced in state facilities.

While the state attempted to decree what types of art, music, dances, and films were socially acceptable, many Soviets chose Western oriented culture or productions composed by dissident artists.²⁶ For youths, Western and underground Soviet rock music was extremely popular. Until 1985, Soviet rock music was prohibited, and rock bands were denied access to Melodia's recording facilities.²⁷ Consequently, Western rock bands whose cassettes were smuggled into the Soviet Union or taped from Western broadcasts had a tendency to dominate Soviet listenership.

In 1985, the Soviet newspaper *Izvestia* reported that in Moscow alone there were eight black-market recording studios that copied popular Western and underground Soviet records onto cassettes. Beyond Western and underground music, popular Soviet records were also illegally taped on the black market being

²⁶ The trend of choosing Western oriented culture was widespread throughout the various regions of the USSR. For a perspective on Central Asia see Chingiz Aitmatov, "The Influence of Information Technology on the Economic and Cultural Life of Soviet Central Asia," *Impact of Science on Society*, no. 146 (1987), pp. 185-186.

²⁷ Melodia had a complete vertical monopoly on the recording business, including authority over who was granted recording contracts, how many tapes were produced, and the distribution and retail sale of the finished product.

either unavailable in state music stores or produced in insufficient quantities to satisfy public demand.²⁸

To circumvent the ban on domestic Soviet rock music, Soviet bands were often innovative in exploiting and circumventing controls over information technologies to their advantage. Russian 'underground' bands and musicians who were denied access to state recording studios constructed crude recording studios, where they recorded albums on discarded x-ray plates or used non-professional audio tape recorders to make cassette recordings.²⁹ Tapes were distributed by either word-of-mouth, posted advertisements, or through friends.³⁰

TOWARDS A MULTI DIRECTIONAL INFORMATION SOCIETY

With the introduction of the policies of *glasnost* a social-political transformation began to evolve in regards to social communication. The flourishing of information technologies facilitated the building of a horizontal and multi-directional communication system, and underscored the traditional top-down communication culture built by the early bolsheviks (Figure

²⁸ N. Kishchik, "Problem: A Round Idol?" *Izvestia* (18 July, 1985), p. 3. Translated in *CDSP* Vol. 37, no. 29 (1985), p. 9.

²⁹ Irina Orlova, "Notes from the Underground: The Emergence of Rock Music," *Journal of Communication* Vol. 41, no. 2 (Spring 1991), pp. 66-69.

³⁰ Kishchik, p. 9.

4.2.).³¹ The process of rebuilding horizontal communications was evolutionary and gradual and by 1990 was far from complete.

As V. Makarov, a member of the Academy of Sciences, states:

The old (vertical) information connections are being eliminated while the new (horizontal) are still not in place. They are to be created and an information environment of a different nature, huge in terms of scale and complexity, is to take shape.³²

The factors affecting the speed by which the new horizontal communication links were manifesting themselves included political, cultural, social, economic and technological considerations.

Figure 4.2.--MODEL OF A MULTI-DIRECTIONAL AND COMPLEX SOCIETY

³¹ For a discussion of the vertical-horizontal dichotomy see Starr (1990), pp. 30-31.

³² Makarov, p. 31

In the pre-Gorbachev days, horizontal communication within society was marginal; dissident movements and non-state associations were brutally repressed to the point where few existed.³³ Nevertheless, many informal and loosely organized dissident networks endured. In order to communicate, dissidents distributed either carbon copied *samizdat* manuscripts or *magnitizdat* tapes amongst their close confidants. Often this form of distribution would multiply exponentially by each person making a few more copies and passing them along.³⁴

Samizdat and *magnitizdat* communication had many drawbacks, however. Authors usually did not receive any feedback or participation in the intellectual dialogue regarding their works. Furthermore, the possibility of arrest through informants and other types of surveillance by the KGB, prevented overt levels of participation and organization by members of dissident networks. This reduced and prevented dissidents from having any effective means of influencing large segments of society. Thus, it was a top priority for the government to keep dissidents atomized by limiting their access to information and communication technologies.

Gorbachev's twin policies of *glasnost* and *democratization*, which created the conditions for the proliferation of information technologies and informatization, had a profound effect on the

³³ Vera Tolz in "The Role of the Media in Political and Economic Change," *RFE/RL* Vol 3. no. 43 (25 October, 1993), p. 4.

³⁴ Hannah, pp. 45-46.

growth of social-political activity within society. While the policies of *glasnost* and *democratization* were based on the free exchange of information, in order to exercise that right to obtain and disseminate information, information technologies were needed to provide material support. Information technologies supported the democratization of Soviet life, and "the conversion to a quantitatively new and significantly higher level of the activities of political institutions of society," (i.e, the Soviets, Party and social organizations, mass information media, etc.).³⁵

A component of the democratization process that benefited heavily from the material support of information technologies were the informal organizations and associations. A key ingredient for the successful organization and mobilization of social political groups and movements was their ability to communicate and disseminate information amongst their members.³⁶ Without such a capability the level of influence that could be derived by an informal group would be marginal.

One of the changes partially brought about by information technologies was the coalescing of many of the small local informal groups into national organizations.³⁷ In the past,

³⁵ Gvishiani, p. 33.

³⁶ Richard Sakwa, *Gorbachev and his Reforms 1985-1990*, (Toronto: Prentice Hall, 1990), pp. 66-67.

³⁷ Information technologies were only one factor in the development of regional and national movements. Other factors such as nationalism also played a large role in the merging of small local based groups. See Charles Zeigler "Environmental Politics and

many of the social-political movements focused on local issues because of the poor state of the communication infrastructure, which made it difficult to communicate and coordinate activities over long distances. As many of the informal groups acquired xeroxing equipment, personal computers with printers and facsimile machines, their ability to communicate with other like-minded groups grew and resulted in cooperation and alliances. In 1987 when the first conference of informal movements was held in Moscow, the 'major achievement' of the conference was the creation of an informational network.³⁸

The Soviet government clearly understood the value informal movements placed on obtaining information technologies. In an unusual twist of events, Komsomol functionaries in Leningrad attempted to use the allure of information technologies to co-opt the Federation of Socialist Clubs--an umbrella organization of independent groups. A *samizdat* article described what occurred:

What they have not promised us in the *Komsomol obkom*!
They promised a xerox machine, and freedom of the press
and a circulation of 300 copies for our paper, with one
condition only, that we work under the auspices of the
obkom.³⁹

Policy under *Perestroika*," in *Politics From Below* J. Sedaitis and J. Butterfield ed., (Boulder Co.: Westview Press, 1991), pp. 117-125.

³⁸ Sakwa, p. 205.

³⁹ "ofitsial'naya pechat o neformalakh i nezavisimoi presse," *Vestnik Kluba Nezavisimoi Pechati*, no. 1 (10 October 1988), p. 23. Quoted in Vladimir Brovkin "Revolution From Below: Informal Political Associations in Russia 1988-1989," *Soviet Studies* Vol. 42, no. 2 (April 1990), p. 237.

Through their ability to 'deliver' or 'confiscate' information technologies the Soviet government attempted to influence informal movements. How widespread this practice was applied was indeterminable.

The impact of information technologies was especially evident in the founding of new independent media organizations. The most prominent of the new media outlets was Interfax. Totally dependent on facsimile machines, Interfax rose to prominence by disseminating uncensored news quickly and accurately. The agency employed over a hundred correspondents throughout the Soviet Union, who communicated via fax machine. Interfax's reputation grew rapidly and was frequently used by Western news agencies as an alternative source of information to TASS and APN.⁴⁰

The alternative media sources increasingly challenged the Soviet Union's state-run media outlets. The new media sources established a private sphere of information outside the domain of the state, which resulted in the loss by the Soviet government of its hitherto ability to mould public opinion. Frederick Starr notes that "the exercise of choice over information emancipates the individual from his surroundings."⁴¹

In the USSR, as elsewhere, it was relatively expensive to start a newspaper, or a television or radio station. The task required a large capital investment and long-term financial

⁴⁰ For a detailed history of the Interfax News Agency see Vachnadze, pp. 55-60.

⁴¹ Starr, pp. 43-44.

resources thereby limiting those that could afford to start a newspaper. As the Soviet Union moved towards a free market and the concomitant proliferation of independent media sources, David Ost reminded us that there are limitations to the free public sphere in capitalist countries, as well. While anyone can own a newspaper or radio station, "in reality only those with lots of money, or with backers with lots of money, can do so effectively."⁴²

In the case of the Soviet Union where personal wealth was less important as compared to one's political status, the *nomenklatura* controlled the material wealth of the USSR and the media. As 'new times' began to bring the Soviet Union in line with the capitalist notion of personal wealth, many members of the *nomenklatura* began to evolve as well. It was reported in the Soviet press that:

Many people who are either former party officials or former holders of *nomenklatura* appointments in the state administrative structure or in economic management have adapted to the new circumstances by turning themselves into a new business class.⁴³

Therefore, there was an ironic danger that the old communist *nomenklatura*, 'the vanguard of socialism', would re-manifest itself as the new economic elite and again have the opportunity to control the media.

⁴² David Ost, *Solidarity and the Politics of Anti-Politics*, p. 24.

⁴³ "The Dissolution of CPSU," *Report on the USSR*, Vol. 3, No. 47 (November 22, 1991), p. 6.

The one 'bright spot' was that the new information technologies had considerably lowered the price of publishing a newspaper or journal. Desk-top publishing software while costing several thousand dollars, including the hardware, was extremely expensive in terms of Soviet income, the price was not insurmountable in contrast to the price of a printing press. By 1990, there were already several new independent publishers, almost all dependent on desk-top publishing equipment.⁴⁴

The growth of new media and publishing sources (e.g., Interfax, *Nezavisimaya Gazeta*, *Ekho Moskvy*) had the effect of providing new feedback mechanisms for the government and society. The diverse points-of-view represented by the new media supplied the government with a wealth of sociological and political feedback concerning government policies and their impact upon society. This new societal gauge was a primary goal and *raison d'être* for Gorbachev's policy of *glasnost*.

ARE THE CHANGES IRREVERSIBLE?

The possibility that the state would reverse its liberalized policies towards information technologies and reimpose an authoritarian-type regime was an undeniable possibility in the Soviet Union. However, it was questionable whether in 1990 such a system could have been reimposed on a more educated and

⁴⁴ Tom Birchenough, "Imaginative Publishing in a Civilized World," *Moscow Guardian* (2 July, 1992), p. 11.

'politically mature' Soviet society. The state would have needed to have gone to incredible lengths in order to gather up all the information technologies that were already in the hands of citizens.⁴⁵ Many leading Western analysts agreed that reimposing strict measures would be a self-defeating measure. Seymour Goodman concludes:

Any nationally pervasive system for controlling people and information would strain the limits of current technology and would be outrageously expensive. Moreover, no such system could be imposed on today's Soviet population by anything short of a return to Stalinist oppression, and any effort to do so on a large scale would likely be resisted to a degree that would threaten the stability of the USSR.⁴⁶

Richard Sakwa concurring with Professor Goodman states:

The new technology of personal computers, international communications, photocopiers and fax machines has been transforming the political possibilities of independent groupings. Only with great difficulty and at great cost to itself, could the state attempt to restrict the flow of information.⁴⁷

In addition, the reimposition of draconian measures would have had an extremely detrimental impact on the Soviet economy and the *perestroika* reforms. Moreover, the need and the desire by the Soviets to keep up with international technology and technological trends would have been severely hampered. Finally, a reimposition of authoritarian measures would have critically damaged the Soviet Union's international prestige, much of which

⁴⁵ Sakwa, p. 66.

⁴⁶ Goodman (1990), p. 545.

⁴⁷ Sakwa, pp. 66-67.

was achieved because of the reforms implemented by Gorbachev.

USERS OF INFORMATION TECHNOLOGIES

Even by 1990, few Soviet citizens encountered or operated information technologies beyond the old traditional information technologies (i.e., tape recorders, TV and radio). Exposure to the new information technologies and services that were rapidly becoming the norm in the West (i.e., computerized banking and reservation systems, fax machines, and lap-top computers) was virtually impossible.

The motivations amongst Soviets for using information technologies were many. For most citizens, the prime motivation for owning information technologies or consumer electronics was likely due to their intrinsic entertainment attributes. In some cases, there was a desire by individuals to obtain more foreign news, cross-check and verify information, and to hear different view-points. Western broadcasts were also considerably more entertaining and contained a better variety of music.

Other groups within Soviet society sought information technologies for reasons specifically related to their vocations or status. Access to consumer information technologies had traditionally been a prerogative of the *nomenklatura* who were able to obtain information technologies through foreign travel, and access to special stores (*beriozka*). During the 'hey-day' of the *nomenklatura* system information technologies were status symbols that conveyed political power and privilege. With the

decline of the party and the privileges that went with membership in the CPSU, the ability of the *nomenklatura* to purchase electronic consumer goods and information technologies diminished.⁴⁸

For members of the intelligentsia (e.g., scientists, academics), white-collar workers, and technocrats, information technologies were largely coveted for purposes related to work. While the group was disproportionately exposed to information technologies in the workplace, only a relatively few, those that had travelled abroad or had contacts in the West, were able to obtain information technologies for their own personal use. The demand for information technologies, especially microcomputers for work, was particularly high amongst this group.⁴⁹

After the passing of the Law on Cooperatives (May 1988), a new class--cooperative owners\entrepreneurs--emerged that wanted to possess information technologies. Richard Judy reported that members of this group "were found to be prominent among those wishing to purchase computers at Moscow's Elektronika Store."⁵⁰ The new cooperative owners wanted the computers for the same purposes of their Western counterparts--i.e., inventory control, computerized accounting and invoicing, and economic analysis.

⁴⁸ In December 1988, the Politburo decreed the closure of thousands of *beriozka* shops. Sakwa, p. 86.

⁴⁹ Judy, p. 47.

⁵⁰ Ibid., 48.

Besides information technologies related to work, for the new economic elite consumer electronics goods were also status symbols that demonstrated their new found wealth. This group's ability to obtain information technologies and consumer electronics consistently grew stronger as economic factors increasingly became the prime factor for their acquisition.

A fourth group that had contact with computers and other information technologies were students at academic levels above the ninth year. Except for graduate and post-graduate students, contact with computers was extremely limited since there were few microcomputers available. In some regions where computers were yet available, a student's exposure to computers was often limited to an hour aboard roving vans equipped with computer labs.⁵¹ For example, during the 1987-88 school year, only 13.7 per cent of secondary schools had computer laboratories. Moreover, this proportion varied amongst republics, and urban versus rural areas. For example, in Ukraine 21.6 percent of schools have laboratories versus 0.6 in Kirgizia and Turkmenia.⁵²

A fifth group that sought information technologies were dissidents and informal movements who wanted them in order to create and disseminate *samizdat* material. As noted above, information technologies were the principal means by which these groups could disseminate information and communicate with other

⁵¹ Rogers, p. 59.

⁵² Judy, p. 35.

like-minded associations. By 1989, accounts of dissidents using desk-top publishing equipment to produce samizdat material were being reported.⁵³

With significant segments of Soviet society having little or no contact with information technologies, either of an educational or practical nature, their prospects for upward mobility were seriously threatened. Knowledge of the new information technologies was an important factor for gaining employment in the increasingly automated and computerised workplace. A U.S. Central Intelligence Agency report predicted that the Soviet Union would become "a society divided into a small, highly educated and highly skilled elite and a relatively low skilled working class, albeit at higher levels than is currently the case."⁵⁴ The prediction was based upon the fact that few Soviets were receiving the educational training or had regular contact with information technologies in order to gain the skills required for the information age.

CONCLUSIONS

The beginnings of the information age in the Soviet Union brought with it many of the same dangers and opportunities that had transpired in the more technologically advanced West. While information technologies increased the Soviet state's ability to

⁵³ Rogers, p. 59.

⁵⁴ U.S. Central Intelligence Directorate, *Soviet Labour Requirements for the Information Era*, DCI/ICS 5386-89, pp. 27-28.

monitor its citizens, the same technologies empowered the citizen by increasing their access to domestic and foreign data, and by providing new tools to generate, store, and disseminate information.

The example of foreign radio broadcasts demonstrated the influence and importance of information technologies in undermining the state's monopoly over information and news. It was shown that listenership was widespread and had a strong influence over Soviet society. Western radio broadcasts had several important consequences for the Soviet government: (i) they undermined the message and content being carried over the Soviet media system; (ii) they promoted values that were contradictory with the values promoted by the party; and (iii) they provided internal and external groups or individuals, who were denied access to state radio, a means to be heard throughout the country.

The period 1985-1990, heralded in a new era in Soviet politics and society. During that period, the traditional vertical conduits of information from the state to society were seriously weakened and undermined by the pervasive growth of information technologies. With the disintegration of the state vertical communication network, there was a concomitant growth in horizontal communication networks throughout Soviet civil society.

Informal movements and the new social movements were direct beneficiaries of the increase in information technologies. The

existence and growth of these new groups was heavily dependent on their ability to communicate their ideas and views to society. In addition, the new social movements required information technologies in order to establish contacts and alliances with other similar associations. Many of the local movements realized that they could not become a potent social-political force without establishing national association.

Another significant development that arose because of the growth of information technologies was the birth of several independent media networks. This resulted in a change in the societal 'nerve-system' from a virtual top-down structure to a dual-directional system. Information flowed both from the state to civil society and vice versa. This development produced a genuine feedback mechanism, which allowed more diverse and clear communication between civil society and the state.

The last section regarding those who employed and desired information technologies indicated several important trends. First and foremost, it revealed that information technologies were evolving from exclusive tools reserved solely for the political elite to up-scale commodities whose procurement was increasingly dependent on economic factors. The economic turbulence in the USSR and lower wages, in comparison to the West, made them almost as difficult to obtain in 1990 as it was in 1985, but for very different reasons.

A second discernible trend was that the desire for information technologies by Soviet users was for essentially the

same reasons and purposes of their Western counterparts--
prestige, work, entertainment and social-political communication.

Finally, the distribution of information technologies was favouring the newly emerging economic elite, whereas prior to glasnost information technologies were the exclusive domain of the political and government *nomenklatura*. This development had serious consequences for those with little contact with information technologies since it would directly affect their chances for social and economic upward mobility.

CHAPTER FIVE

CASE STUDY:

THE VCR AND SOVIET SOCIETY

The advent of the video cassette recorder (VCR), one of the fastest growing and destabilizing new information technologies to confront Soviet authorities, dealt one of the greatest blows to the Soviet government's monopoly of information. The VCR provides an excellent model for a case study towards understanding the implications and effects, both social and political, of a new information technology upon Soviet society.

The VCR had a substantial impact on the state's hitherto monopoly of visual images. Along with the proliferation of VCRs was a concomitant growth in the availability of 'illegal' Western films and pornographic material. While most of the films that reached the Soviet Union were entertainment-oriented, every film--even the most seemingly innocuous movie-- carried some sort of underlying social-political message or theme.

The VCR merits attention is due to the very nature of the VCR itself. It is a versatile and compact tool that can be used to perform various operations, namely altering and editing video taped material, and taping live events. The versatility of the VCR made it a potentially powerful instrument for Soviet dissidents and illegal movements in creating and disseminating non-government information.

Much to the consternation of Soviet officials, the growth in video machines and films spawned a blackmarket and underground video industry that led to a serious increase in speculation--a serious crime in the Soviet Union.

Finally, unlike other information technologies the VCR was a technology that had been sought after by a wide range of individuals, namely the well educated and technocratic elite. The strong demand for VCRs made it difficult for authorities, many of whom were VCR consumers themselves, to classify VCRs into the same technological category as the photocopier, which had no entertainment value. The reluctance to ban VCRs, and the tacit acceptance of VCR's by Soviet authorities allowed VCRs to proliferate at a very quick rate.

NUMBERS

The domestic production of VCRs began relatively late in the USSR as compared to the West.¹ For this reason the vast majority of VCRs in the Soviet Union were imported, most were brought in 'by ones and twos' by diplomats, sailors and others who travelled abroad. Consequently, the number of VCRs in the USSR is low. In 1990, according to estimates, there were no more than 300,000

¹ During the 1970s, VCRs were produced in small numbers. According to the Soviets, the machines were withdrawn from the market due to their poor quality. Donald Shanor points to an alternative reason for the withdrawal of the machines. He suggests that Soviet officials withdrew the VCRs when they began to realize the VCRs potential danger as an instrument in eroding the states control over information. Shanor, p. 158.

VCRs in the USSR² or about one for every seventy families.³ In contrast, 44.1 million U.S households had VCRs which constituted fifty eight percent of all American households.⁴

The first Soviet VCRs (Elektronika VM-12), were manufactured in May 1984 in Voronezh, and were based on the French SECAM format.⁵ Initial output for this year was approximately four thousand machines. The retail price of a Elektronika VM-12 VCR was 1,200 rubles.⁶ The following year, output jumped to twenty thousand VCRs, despite state plans calling for 32,000 machines. The first years of production at the Voronezh plant were plagued by shortages of parts and technical difficulties. In addition, many of the machines that reached the store shelf had to be returned to the factory immediately because of malfunctions resulting from shoddy workmanship and design flaws.⁷ Despite these problems, Soviet planners called for the manufacture of 60,000 machines by 1990 and 120,000 by 2000.⁸

² Benn, p. 36.

³ Vachnadze, p. 381.

⁴ U.S. Bureau of the Census, Table 8.3.

⁵ A. Lipkov, "How's it Going, Video," *Izvestia* (31 December, 1986), p. 3. Translated in CDSP Vol. 38, no. 52, (1986), p. 19

⁶ V. Tolstov, "Electronic Equipment in our Homes," *Izvestia* (March 21, 1987), p. 4. Translated in CDSP 39 no. 12 (1987), p. 16.

⁷ Yasman, "Video in the Soviet Union: Trouble with a Capricious Stepchild," *RFE/RL* 129/86 (1986a), pp. 2-3.

⁸ "Comprehensive Program for the Development of Consumer Goods Production and the Service Sphere in 1986-2000," *Pravda and Izvestia* (9 October, 1985), pp. 1-3. Translated in CDSP Vol. 37, no. 41 (1985), pp. 18-19.

To alleviate the shortage of parts and to gain the expertise needed to manufacture large numbers of quality VCRs, many Soviet firms looked abroad for assistance. In 1990, the Elektronika plant in Voronezh added two assembly lines with parts supplied from the South Korean firm Samsung, which brought the plant's annual production up to 250,000 VCRs.⁹ The Japanese company Fuai supplied parts required for assembling VCRs to a branch of the Lipetsk steel mill in exchange for metal exports.¹⁰ Holland's Philips Corporation supplied the Urals Electrical Engineering Plant (UEMZ) with parts needed to assemble about eight thousand VCRs annually with a goal of 100,000 VCRs by 1995.¹¹ While most Russian manufactures intended to replace imported parts by locally produced parts, this was an unlikely prospect due to the upheavals created by economic reforms.¹²

In 1985 the Soviet Union reported the production of 6,800 VCRs; in 1988, the Soviets produced 72,900 VCRs¹³, and the following year production jumped to 125,000.¹⁴ In 1990, the combined Soviet production and assembly of VCRs totalled 454,000,

⁹ Vachnadze, pp. 370-372.

¹⁰ Ibid., pp. 370-371.

¹¹ Igor Dubrovkin, "Plant 333 Aims At VCRs and CDs," *Business in the USSR* No. 15 (September 1991), p. 28. The machines were priced at 3,200 rubles, approximately one-third of the Soviet black-market price.

¹² Vachnadze, pp. 370-372.

¹³ "The Report of 1988 Plan Fulfilment," *Pravda* (22 January, 1989), pp. 3-5. Translated in *CDSP* Vol. 41, no. 4 (1989), p. 13.

¹⁴ Benn, p. 36

a 3.6 fold increase from the previous year.¹⁵ Nevertheless, there remained a great deal of unfulfilled demand. In 1990 when Panasonic VCRs arrived in Yaroslav, the store selling them was besieged by eager consumers. The consignment of VCRs destined for labour collectives and not for general public consumption, sparked demonstrations and even a hunger strike by local residents. In the end, the labour collectives was forced to share a portion of their 'treasured' VCRs with the general public.¹⁶

Video cassettes were also produced in Voronezh in 1985. Production of cassettes remained low because of material shortages, and the appropriation of film stock by the Soviet film industry (*Soiuzkinofond*). Video cassettes that did make it to the market were quickly snatched up. The Soviet press reported that much of recorded material put on sale was subsequently taped over with foreign films and programmes.¹⁷ Consumers were more interesting in acquiring cassettes *per se* rather than what was on the tapes. In 1986, the price of a blank cassette was 40-50 rubles, while imported cassettes cost 70-80 rubles.¹⁸

¹⁵ Pollard, p. 254.

¹⁶ P. Nikitin and D. Pushker, "Video Rioters" *Sovietsky Rossiya* (April 7, 1990), p. 2. Translated in *CDSP* Vol. 42, no. 5 (1990), p. 31.

¹⁷ Starr (1990), p. 39.

¹⁸ Yasman (1986a), p. 4.

ACCESS

In the early 1980s the VCR was the "premier symbol of status among the globe-trotting cultural, scientific and political elite."¹⁹ Initially, video cassette recorders were imported mainly by Soviets that travelled abroad (e.g., diplomats academics, and sailors) and foreigners living in the USSR. Since the implementation of the 'Law on Cooperatives' (1987), a new class of entrepreneurs emerged whose income was substantially higher than those employed in the in the State sector. With the demise of the prestige of the CPSU, the new business class of citizens began to slowly usurp the old elite in its ability to acquire hard currencies and travel abroad.

The principal prerequisites for ownership of a VCR was the opportunity to purchase the VCR, afforded mainly to those who were able to travel abroad, had access to *beriozka* stores, or had a contact active within the blackmarket. The possession of hard currency with which to purchase the VCR was a necessity.²⁰ It was not uncommon for those who could not afford to buy a VCR individually, to pool money together with friends or relatives to purchase a VCR that would then be owned collectively.

¹⁹ Gladys D. Ganley and Oswald H. Ganley "The Political Implications of Video-Cassette Recording," in Issues in New Information Technology, Benjamin M. Compaine ed. (Norwood N.J.: Ablex Publishing, 1988), p. 275

²⁰ Douglas A. Boyd, "The Videocassette Recorder in the USSR and Soviet-Elec Countries," *The VCR Age* (London: Sage Publications, 1989), pp

In contrast to the West where over fifty percent of households had VCRs, personal ownership of a VCR was quite rare in the USSR.²¹ Consequently, those that did own a VCR usually shared it with a wider circle of friends and acquaintances than would their Western counterparts. Furthermore, Soviets that do own VCRs often use them as profit-generators, charging viewers to see Western films and pornography.²²

Unlike many other commodities the VCR over time has decreased in price. The cost of a VCR in 1983 on the Soviet blackmarket was about 3,500 rubles (or about \$4,900 US). The average monthly wage at that time was about 180 rubles (\$252).²³ In 1985, the price of a VCR dropped to about 2,500 rubles (\$3,500).²⁴ In 1988, in line with the decrease in the price of VCRs in the West, the price of a imported VCR dropped to between 1100-2500 rubles (\$1,550-3,500), depending upon the age and features of the VCR.²⁵ A comparable machine cost between \$250-600 in the United States.²⁶ By 1990, the price for a video player dropped significantly to about five thousand rubles or

²¹ U.S. Bureau of the Census, Table 8.3.

²² Boyd, p. 254,

²³ Schmemmann, "Video's Forbidden Offerings Alarm Moscow," *New York Times* (October 22, 1983), p. A4.

²⁴ Philip Taubman, "Oh Comrade, Can I Borrow Your Rambo Cassette," *New York Times*, (December 9, 1985), p. A2.

²⁵ Boyd, p. 260.

²⁶ Vachnadze, p. 369.

(\$300), while a video recorder fetched seven thousand rubles (\$400).²⁷

MOTIVATION FOR OWNERSHIP

Video cassette recorders have primarily served three needs or functions in Soviet society. Firstly, as a medium for Western or alternative entertainment, and as a means to learn more about the world beyond the 'iron curtain.' Secondly, as a means of generating personal profit. Lastly, as a tool for Soviet 'activists' to undermine the state, and as a medium of horizontal communication.

The primary use for video cassette recorders amongst Soviet citizens was for its entertainment value. Programming on Soviet television could be perceived as extremely tiresome in its discussions of crop production, output quotas and classical ballets. Western films being more entertainment-oriented in nature filled a large void in Soviet programming. Soviet youth, in particular, tended to be attracted to the violence, sex and special effects present in Western films.

Another motive for watching Western programmes was the desire to learn more about the West and elsewhere. Since most televised information concerning life in the West was heavily censored, viewers were naturally curious to see films depicting Western life and attitudes. In this regard, films provided a

²⁷ The increase in the ruble price was a result of inflation, for those Soviets whose salary did not keep up with inflation the price of a VCR actually increased. Ibid., p. 374.

window to the rest of the world. This type of entertainment was particularly pertinent to the large urban elite who had more sophisticated tastes and demanded wider and more diverse varieties of programming.

The selection of contemporary Western films that could be bought and rented throughout the Soviet Union, primarily in the large cities, was often astounding. New Western films, often less than a year old, were quickly pirated from Western sources, dubbed into Russian, and distributed throughout the USSR by video networks. The films were then sold in kiosks, underground retail networks or through private individuals.

The smuggling of video machines and films into the Soviet Union and the copying and dissemination of Western films became one of the fastest growth industries in the Soviet underground economy.²⁸ The operations were often elaborate and complex, involving many individuals and cities throughout the Soviet Union.

One of the most important components of the black-market video industry was the copying and dubbing of Western films. Dubbing was accomplished with hired actors and actresses reading parts onto audio tape as the film was running. The audio tape was then transferred to the audio track of the master cassette copy. In Moscow it was reported that an underground video cassette ring employed translators (many from important language institutes) to dub Western films. The payment for dubbing a film was between

²⁸ Schmemmann, p. 4.

thirty and forty rubles.²⁹ However, translators would often do the work for free in exchange for the privilege of viewing the film.³⁰ The dubbing industry was particularly prevalent in port cities such as Odessa, Riga and Tallin into which sailors smuggled in films or the films were recorded off of Scandinavian television.

Black-market trading networks and stores where Soviets could buy and trade films appeared in all the major cities. There were also underground video rental libraries. The cost in 1985 of a Western 'bestseller' was between 200-250 rubles while the cost of renting a film was about ten rubles.³¹ Past bestsellers in the Soviet Union included, 'The Godfather,' 'Terminator,' 'Apocalypse Now' and 'Jane Fonda's Workout.'

For those who did not own their own machines, underground video parlours sprang up throughout the Soviet Union. The parlours showed both entertainment-oriented films and pornography. At times the parlours were set up in random places such as kindergarten classroom and private apartment. In other places the parlours were more organized. For example it was reported that videos were shown after-hours at the *False Gelendzhik* bar and restaurant on Soviet Georgia's Black Sea coast. Carefully screened customers were each charged fifty

²⁹ Taubman, p. A2.

³⁰ Mickiewicz (1987), p. 137.

³¹ Taubman, p. A2.

rubles a piece (\$70) to view Western films.³² In another case reported in the Soviet media, a coach in the city of Namangan charged his students ten rubles (\$11) to view 'obscene' films.³³

The third motivation for possessing a VCR was to employ video cassette recorders as a means of subverting the state and as a medium for dissident communication. Videotapes and VCRs afforded new opportunities for political dissidents to record and circulate 'seditious' material free of state censorship since video cassettes were compact, simple to copy, and could be easily smuggled. The use of video as a means of illegal communication was termed *magnitzdat*. Naturally, *magnitzdat* was of great concern to Soviet authorities since it was a form of horizontal communication that was extremely difficult to monitor.

Unlike other forms of dissident communication, video machines provided a combination of visual and audio material hitherto available. While video material could simply be watched, the VCR found its versatility as a machine that could also be used in a myriad of new ways. Using video cameras and other video equipment Soviet activists could record protests, meetings, environmental disasters, etc.³⁴ Moreover, the VCR could be used to produce, manipulate, distort, and edit existing Soviet

³² Schmemmann, p. A1

³³ Boyd, p. 263.

³⁴ Protests in Soviet Armenia in the spring of 1988 were taped by amateurs and delivered to foreign news agencies in the Soviet Union. Boyd, p. 264.

film. For example, official film stock could be juxtaposed with an official explanation in such a way as to discredit or sow doubt, or a Soviet programme could be redubbed with anti-Soviet commentary.

Dissidents established underground networks and pipelines to circulate video material. In Estonia *magnitizdat* was used to record Western news programmes picked up from Finland and Sweden television and then distributed throughout the USSR. The power of the VCR was demonstrated when the dissident Bukovsky was exchanged for Chilean Communist Leader Luis Corvalan. The Soviet press attempted to suppress the story and then later denied its veracity when rumours began to circulate about its actual occurrence. However, Finnish television broadcasted pictures of the exchange, which was recorded by Soviet dissidents and then circulated. The videotape of the release became a 'classic' amongst dissidents.³⁵

Video was not by any means limited to non-governmental functions. Soviet authorities also tried to use video to their benefit. In July 1985, just prior to the Gorbachev-Reagan Summit in Geneva, video tapes of dissident Andrei Sakharov appeared in West Germany. The tapes, designed to deflect attention from Sakharov's on-going hunger-strike showed him healthy and in excellent physical form, living in the closed city of Gorky. The videos, undoubtedly filmed by the KGB showed Sakharov chatting

³⁵ Shanor, p. 155.

with his doctor in his doctor's office, and walking with his wife.³⁶

IMPACT ON SOCIETY

The advent of 'private' television allowed viewers to watch programmes in the privacy of their homes with the freedom to discuss and to interpret the material without state supervision. With the advent of the VCR, viewers went a step further by deciding what they would watch, and when they would watch it. In a sense, VCRs liberated the viewer from the programming dictates of state television and the state itself.³⁷

The 'individualization of television' was considered by Soviet authorities to be one of video's insidious aspects and with the proliferation of video cameras the situation worsened in the eyes of Soviet authorities. Individuals had the ability to produce films that would not always be in accordance with official 'viewpoints'.

Another aspect of the results of public viewing choice that perturbed Soviet officials was the increasing number of individuals being exposed to Western films and programmes. The implications of watching foreign programmes or films of one's choice in the USSR was that it expanded the realm of images, ideas and themes (moral, political, and social) beyond that which

³⁶ "Sakharov: the Video," *Index on Censorship* Vol. 15, no. 2 (1988), p. 37.

³⁷ Boyd, p. 258.

the government wished to permit. Western films contained not only exciting car chases but they also imported new attitudes, aspects of Western pop culture, and by and large a lifestyle attractive to many Soviets.

While most Western or American films seemed by Western standards to be politically innocuous, they often carried themes and images that contradicted Soviet teachings and glorified capitalism. Soviet ideologists had long argued that while American film makers may have believed that their films did not carry a political message, they inevitably did since they did not exist within an ideological vacuum. For example, a movie that, as a matter of course, favourably depicted middle class life in America might inadvertently magnify the fallacies and inadequacies of Soviet life. Likewise, a movie such as 'Star Wars' could be interpreted as a futuristic portrayal of revolt by dissidents (the Rebels) against the Soviet Union (the Empire).

According to Veronika Kononenko, even politically innocuous Western video films were dangerous because they were conducive to empty time-wasting. Moreover, Kononenko claimed that these films "inveigle, stupify and accustom people to being lazy."³⁸ Soviet authorities also feared that the violence in Western films such as 'The Godfather' would teach viewers how to perpetrate violent and criminal acts.³⁹

³⁸ Veronika Kononenko, *Chelovek i Zakon* No. 5, 1986, summarized in *RFE/RL* 355/86 (1986), pp. 4-5.

³⁹ Boyd, p. 263.

Another category of films that carried potentially dangerous messages were the many films that mushroomed during the Reagan years that carried an undisguised and hostile attitude towards communism. Movies like 'Rambo,' 'Moscow on the Hudson,' 'White Nights' and 'Red Dawn' had blatantly anti-Soviet messages. Some Soviet authorities suspected that Western intelligence agencies were introducing and distributing selected 'anti-Soviet' films into the USSR through diplomatic channels.⁴⁰

Occasionally, it was not only Western films that were problematic but ones from other East bloc countries. One of the most popular movies in 1985 was the Polish film 'Man of Iron,' directed by Andrzej Wajda, which chronicled the labour unrest at the Gdansk shipyards, the birthplace of Solidarity. The film was banned in the USSR.⁴¹

Soviet authorities were also particularly distressed by the proliferation of pornographic films. Pornography, long suppressed in the Soviet Union, was linked by the Soviet press to Western efforts to undermine surreptitiously the morality of Soviet youth and ultimately the regime.⁴² An article in the Soviet press stated that pornography "is interwoven with lauding the bourgeois way of life. It goes without saying that this, too, is aimed

⁴⁰ Boyd, p. 261.

⁴¹ Ganley, p. 275

⁴² Mickiewicz (1987), p. 136.

primarily at poisoning the mind of the younger generation."⁴³ The spread of pornography undoubtedly brought with it the many adverse social effects that have been associated to the pervasive nature of pornography.

The importation of foreign video tapes and the video recording of foreign programmes eroded the Soviet states autarkic control over television--a principal information technology for vertical control over information. Whether Soviet citizens decided to watch films like 'Amadeus,' 'Emmanuel,' or 'Doctor Zhivago,' video allowed Soviet viewers to make independent choices that were previously not possible.⁴⁴

The VCR also brought Soviets citizens one step closer to the new phenomena of global culture. Soviet citizens were becoming increasingly in contact with fashion, music and cultural trends that existed in New York, Paris and London. Undoubtedly, Soviet efforts to create a uniquely Soviet\socialist culture had been severely undermined.

The VCR also became another component of an increasing number of information technologies supplying Soviet citizens with news, views and images from abroad. When all these sources were synthesized, astute citizens were able to make increasingly well-informed and independent opinions about domestic and international events.

⁴³ Abaiev, K., "Pokazhet Video" *Izvestia* (June 23, 1985), p. 6 reprinted in Mickiewicz (1987), p. 136.

⁴⁴ Starr (1990), p. 39.

GOVERNMENT REACTION AND POLICY TOWARDS VCRS

Since the introduction of VCRs into the USSR in the late 1970s, Soviet authorities had been concerned about the moral, political and economic implications of this new technology. Soviet officials attempted various strategies to control the proliferation of VCRs, non-Soviet films and the associated blackmarket. Ironically, it was the participation of the Soviet *nomenklatura* in the importation of VCRs that began the video revolution in the USSR. To some extent, Soviet authorities could be blamed for creating the video boom since it was they who had created the fascination with the television.⁴⁵

In the late 1970s and early 1980s the initial reaction of Soviet authorities towards the VCR was one of concern but inaction. Their indifferent approach was mainly due to the small number of VCRs in the USSR, and the fact that these machines were primarily owned by trusted members of society. Soviet authorities felt that the VCR was no more than a novelty with little potential of becoming a mass phenomenon.⁴⁶ Moreover, there was a sense of ambivalence amongst various Soviet authorities, who on one hand wanted to control information and on the other hand wanted to keep up with the technological achievements of the West.⁴⁷

⁴⁵ Mickiewicz (1987), p. 137.

⁴⁶ Yasman (1986a), p. 1.

⁴⁷ Ganley, pp. 284-285.

The importation of foreign video equipment was not illegal. Foreigners, diplomats, and Soviet citizens returning from abroad were allowed to bring home VCRs for their personal use, the only regulations being that the VCR had to be declared at customs upon entry and that Soviet citizens had to prove that they had obtained the VCR with legally acquired foreign currency. This was difficult since few Soviets, except for the elite *nomenklatura*, were paid or given travel allowances in foreign currency. Soviet citizens travelling abroad in a private capacity were severely limited in the amount of foreign currency they could legally convert and take outside the USSR. Their only alternative was to attempt to prove that the VCR had been bought by relatives living in the West as a gift.⁴⁸

In addition to the above, there were still problems with owning a VCR if one was not a member of the *nomenklatura*. Possession often led to persecution and harassment by overly vigilant Party organizations.⁴⁹ VCR owners were automatically considered suspicious by some authorities of speculation or other crimes since the price of a VCR was the equivalent of three years salary.⁵⁰

Video tapes, which again were not illegal, also posed a problem for their owners. Many of the Western films smuggled into the USSR contained material that violated the laws on anti-Soviet

⁴⁸ Yasman (1986a), p. 5.

⁴⁹ Shanor, p. 156.

⁵⁰ Vachnadze, pp. 381-382.

propaganda and pornography. As such, they were treated as subversive material, in the same way as a banned book. Those possessing such material were persecuted. In some cases, those caught with 'subversive' video tapes were treated more harshly than those possessing a banned book since a video was considered by some officials to be a more effective medium for propaganda.⁵¹

But while authorities were persecuting individuals for possession of illegal video tapes, Soviet authorities tended to be more concerned with the growing underground video market\networks and speculators. As early as 1983 it was reported in Soviet newspapers that the KGB had set up an extensive dragnet, concentrating on illicit video-trading operations. The often cited prison term for those found guilty of video speculation was 1½ to 3½ years in prison.⁵²

One method that was reported to have been used by the KGB to apprehend people watching 'anti-Soviet' video films or pornography was to first cut the electricity to a suspects apartment. The militia then entered the apartment under a suitable pretext and examined the video cassette that was stuck in the machine. Those caught watching 'subversive' films, would then face charges. Larger prison terms were given to those showing illegal films to audiences since they were violating

⁵¹ Shanor, p. 156.

⁵² Schmemmann, p. A4.

guilty of violating laws against the 'popularization of pornography, corrupting minors and profiteering'.⁵³

The Soviet press took an active role in dissuading Soviets from watching foreign films, several articles appeared, which emphasised the dangers of the VCR and Western movies. Articles were published that described the effects of Western films on Soviet society. In one article in *Sovetsky Rossiya*, the journalist described how one woman had to be confined to a mental institution after having watched Western horror movies.⁵⁴

Despite the crackdown and persecutions for those involved in the underground video industry, the governments punitive efforts were having only a marginal effect. Video machines were continuing to proliferate at an alarming rate as was the video underground that supplied the machines and the films. In fact, heavy-handed Soviet policies were forcing all aspects of the video revolution further underground. In 1984, the Soviet leadership decided to counter the video boom by cooptation.⁵⁵ This policy decision was reinforced by Gorbachev, who recognized the technological benefits of the VCR.

The new strategy of cooptation, with the primary goal of destroying the worst elements of the video revolution, was focused in two directions: on breaking the blackmarket and

⁵³ Vachnadze, p. 381.

⁵⁴ Boyd, pp. 258-259.

⁵⁵ Victor Yasman, "The Collectivization of Videos," *RFE/RE* (September, 1986b), p. 1.

impeding the growth of 'anti-Soviet' and pornographic films. In an attempt to destroy these unsavoury elements, the Soviet government decided to create a state-run video sector.

The first track was aimed at destroying the thriving blackmarket for Western VCRs. To this end, the Soviets began to manufacture a domestic VCR--the Elektronika VM-12--based on the French SECAM format. Soviet authorities deliberately chose to utilize the SECAM video format since it was incompatible with the vast majority of imported Western films. Nonetheless, these machines could be converted to the more universal PAL video format, producing an illicit spin-off industry for electronic technicians.⁵⁶

At the beginning of 1986 in an effort to further undermine the blackmarket in foreign video machines, the government slashed the prices of imported VCRs at *Komissionyi* (second-hand) stores in Moscow and Leningrad by approximately fifty percent. The goal was to bring the VCR prices in line with the prices in the *Beriozka* stores, thereby making imported VCRs cheaper and more accessible to the average consumer. Much to the chagrin of Soviet authorities this measure had the opposite effect, however. Those wishing to sell a VCR turned to the blackmarket since it had become unprofitable to sell via the *Komissionyi* stores. As result

⁵⁶ Western VHS video cassette tapes were physically compatible with the VM-12, however, to obtain a satisfactory picture on a Soviet TV a converter was necessary in order to convert the image to the West European SECAM-West and PAL television scanning systems. Conversion to the American-Japanese NTSC system was virtually impossible. Yasman (1986b), p. 4.

of the measure, VCRs disappeared from *Komissionyi* stores in Moscow and Leningrad.⁵⁷

A second front was waged to kill the black market in Western films, and squash the voracious Soviet citizens' appetite for Western films. To this end, Soviet authorities decided to set up video outlets, called 'videothèques,' to rent out sanctioned Soviet films at a cost of about two or three rubles a day.⁵⁸ By 1987 there were 140 such videothèques throughout the Soviet Union.⁵⁹

The Soviet Union's first videothèque was opened in Voronezh, the same city where the first Soviet VCRs had been manufactured. The video libraries held approximately 450-600 titles of old and classic Soviet films.⁶⁰ Many of videothèques had viewing booths where groups of people could sit and watch movies.⁶¹ The Soviets opened up similar video-libraries in Moscow, Minsk, Vilnius, and Riga. The Baltic Republics and port cities were heavily targeted because they were the main entry points for Western films and had the most active black markets.⁶²

⁵⁷ Yasman (1986a), pp. 2-3.

⁵⁸ Taubman, p. A4.

⁵⁹ L. Parfenov., "Tretii Ekran: Video: Sevodnya i Zavtra" *Pravda* (25 September, 1987), p. 3

⁶⁰ Ibid.

⁶¹ Lipkov, p. 19.

⁶² "Coming Next on Video," *CDSP* Vol. 37, no. 25 (1985), p. 24

Accompanying efforts to wean Soviet citizens off Western films were new laws designed to combat the distribution, possession and duplication of illegal and pornographic films. On 1 August 1986, in recognition of the growth in pornography and violent films, the Russian Supreme Soviet passed legislation making a criminal offense of "the production, distribution, showing, or storage of films that propagate the 'cult of violence and cruelty.'" Those convicted of such offenses were subject to imprisonment for up to two years.⁶³ Moreover, the Ministry of Internal Affairs compiled a blacklist of films to be banned,⁶⁴ and in 1988 the Soviet Customs Administration set-up a special department to exercise control over imported films.⁶⁵

Despite Soviet efforts to reduce the Soviet appetite for foreign films, the measures taken had only a marginal impact. In regard to the videotheques, Soviet poetess, Larissa Vasilieva points out, "with respect to classics and history, we cannot expect everybody to be eager to watch these films only."⁶⁶ The Soviet press also acknowledged the poor selection at the state-operated video stores. *Sovetsky Kul'tura* reported that "video

⁶³ "Decree of the Presidium of the Russian Republic Supreme Soviet: On Additions to the Russian Republic Criminal Code," *Vedomosti Verkhovnovo Soveta RSFSR* no. 32 [1450] (August 7, 1986) item 904, p. 579.

⁶⁴ Vachnadze, p. 382.

⁶⁵ "Customs Yields Benefits," *Izvestia* (November 15, 1988), p.3. Translated in *CDSP* 40, no. 46 (December 14, 1988), pp. 17-18.

⁶⁶ Branson, Louise, "Blue Movies Furore, Makes Russia Flush," *The Sunday Times* (January 25, 1987), p.30.

traders were among the first to peer cautiously into Soviet video centres and breath a sigh of relief when they realized that, for the time being, there was no threat of competition."⁶⁷

To further aggravate the situation of Western films, Soviet efforts to stop the import of Western films and programmes were largely unsuccessful. Soviet borders remained porous to the video revolution. This was especially true for places like Tallin, in Estonia, where Finnish TV programmes could be received, taped and then distributed throughout the Soviet Union without having the risk of physically traversing borders.

In 1986, at the same time when Soviet officials began their efforts to co-opt the video revolution, hardliners began publishing articles pushing for a 'recollectivization' of video machines. The press ran a series of articles emphasising the positive collective uses of video.⁶⁸ One article, in particular, discussed the merits of VCRs for remote areas in the Far East, Siberia and tour-of-duty settlements where cinema facilities did not exist and few recreational activities for inhabitants were available. In addition there were articles discussing the use of VCRs in schools and for training athletes.⁶⁹

⁶⁷ Yasman (1986b), p.2

⁶⁸ For examples see, V. Kononenko in *Chelovek i Zakon* and A. Lipkov "How's It Going Video?" *Izvestia* (December 31, 1986), p. 3 reprinted in *CDSP* Vol. 38, no. 52 (1986), p. 19.

⁶⁹ A. Lipkov, p. 19.

In 1991, the government again attempted to counter the alarming growth in pornography by passing the resolution "On Urgent Measures Against the Promotion of Pornography and the Culture of Violence." Many of the measures were specifically directed against video. One of the announced measures states:

--The Council of Ministers of the USSR...shall set forth the terms and conditions for showing and otherwise using and importing and exporting the same, and the procedure for opening and registering businesses showing video films and for obtaining licences for showing of said products.⁷⁰

This effort like the many previous measures were likely to have only a small effect on rapidly growing phenomena. Despite the rhetoric, Soviets authorities possessed limited resources to deal with the problem of pornography, and with the rise of many other social problems (i.e. violent crimes, larceny). In the end, stamping video pornography would likely receive a low priority.

CONCLUSIONS

The video revolution illustrate.. several significant facts regarding information technologies in the Soviet Union. First, access to VCRs was largely limited to the urban political elite and the newly emerging economic elite. The high cost of obtaining a private VCR was usually too expensive for the vast majority of Soviet citizens employed by state despite decreasing prices.

⁷⁰ The "Resolution of the USSR Supreme Soviet on Urgent Measures Against the Promotion of Pornography and Violence" is reprinted in Vachnadze, pp. 385-386.

Soviet manufacturers had great difficulty in single-handling supplying VCRs for the market place. This compelled Soviet manufactures to rely upon Western parts, cooperation and expertise. This should not, however, be seen as a negative phenomena since the Soviets were quickly gaining much needed technical and manufacturing expertise.

The motivation for owning a VCR was for basically three reasons: first, as an medium for Western or alternative entertainment, and as a means to learn more about the world; second, as a means of generating personal profit; and finally, as a tool for dissidents to create alternative horizontal communication links.

The case of the video cassette recorder, highlighted the impact information technologies had upon Soviet society: first, the case study showed that VCRs eroded the state's monopoly over visual images; second, the study illustrated how the VCR increased the availability of Western information into the USSR; and finally, the study demonstrated how information technologies facilitated 'social individualization.'

Despite Soviet efforts to halt the spread of video, the case of the VCR showed that this was a difficult task. First, efforts to seal Soviet borders in orders to keep out unwanted films was virtually impossible due to the compact size of the video tape, and because Western films were taped off of Scandinavian television, which eliminated the risk of smuggling films into the USSR. Efforts by Soviet authorities to co-opt the 'video

revolution' failed because they did not provide a viable alternative for the Soviet public. Finally, Soviet authorities conceded that video growth was a permeant trend and were left trying to stamp out its more insidious aspects such as pornography.

CONCLUSIONS

Whilst one must remain cautious in predicting the direction of technological trends and their impact on society, information technologies will undoubtedly continue to act as a catalyst of societal change in the Soviet Union. The scientific-technological-revolution, as Soviet theoreticians pointed out, is intimately intertwined with society. Tracing back developments from the past 70 years has demonstrated several undisputable realities and trends.

Since the inception of 'serious' Soviet literature concerning information technologies and society, this literature and trends within that literature were strongly linked to the political outlook held by the leaders of the Party and the state. Moreover, Soviet theories were bound by the theorists obligation to conform theory to Soviet political 'realities'. For example, during the Brezhnev when the state took a conservative position towards technologies that would alter the political\social status quo, academics conceived the theoretical model 'automation'. Automation was politically acceptable since it generally limited information technologies to production, thereby ensuring the party's continual monopoly over information and information technologies.

Since 1985, after decades of attempting to control information technologies, Soviet government policies concerning information technologies began on the path of liberalization. The thesis demonstrated that in the past when Soviet authorities attempted to

seal the borders of the Soviet Union to outside intrusions of information, the policy ultimately failed. Significant segments of society were able to circumvent the "Iron Curtain" surrounding the USSR via various information technologies. Once the curtain was drawn open and perforated, non-sanctioned ideas, values and notions were able to stream in and undermine Soviet ideology. These ideas, as shown in the case of Western radio broadcasts, had a strong influence on Soviet society.

The case of the VCR demonstrated indepth the difficulties experienced by the government in preventing prohibited activities with information technologies. State efforts at halting the importation of foreign videos and films was met with failure, especially in light of the fact that many Western films were taped within the Soviet Union (Baltic Republics) from Scandinavian television, which made smuggling unnecessary. Soviet government attempts at co-opting the video revolution also failed miserably since authorities were unable to replicate the same quality and diversity of entertainment found in foreign films. Eventually, Soviet authorities were forced to concede that they could not stop the importation of Western films, and were then compelled to focus on weeding out the more insidious aspects of the video revolution.

The policy of limiting contact with the West and suppressing information was also self-defeating for the USSR since it prevented Soviet citizens from sharing in global developments in all fields of knowledge (medical, technological, sociological, etc.), which had the effect of stifling the development and progress of Soviet

society. Ultimately, it was the stagnation of the economy that acted as the decisive factor in forcing the Soviet government on a path of social liberalization. It is a strange irony of the information revolution that in order to survive economically the Soviets required the latest advances in information technologies; however, as soon they acquired them, these same technologies facilitated the unleashing of various societal forces--nationalism, pluralism, individualism--that ultimately led to the dissolution of the Soviet Union.

The forces that were unleashed because of Gorbachev's program of *glasnost*, which initiated a communications revolution in the USSR. The intention of *glasnost* was to re-fashion the vertical communication conduits making them more multi-directional, but also to regenerate and establish horizontal links within Soviet society. Prior to Gorbachev's policies of *glasnost* and *democratization* there was essentially a uni-directional flow of information--from the state to society. This permitted the state to transmit a single controlled message and ideology to the Soviet masses.

The development of a horizontal conduits and networks within the Soviet Union through the expansion of communication and computing technologies facilitated the growth of informal groups and association. Only through their ability to communicate their ideas and views to a large segment of the population, independent of state control, could these groups attract members. Moreover, information technologies were a factor in the coalescing amongst societal groups into national movements by facilitating better

communication.

Information technologies also brought about several other social trends: (i) they promoted social individualization by privatizing a sphere of social discourse that was difficult for Soviet authorities to penetrate and monitor; (ii) they permitted Soviet citizens to view a wider variety of non-sanctioned forms of entertainments and programmes, both domestic and foreign; (iii) they created an ever growing segment of society that was computer literate and had the ability to obtain, manipulate, and transmit authorized and unauthorized forms of information. All of these phenomenon combined contributed to the steady erosion of state control in the former omnipotent Soviet state.

Prospects for future societal change depended enormously on the continued growth of information technologies within the Soviet Union. By 1990, the outlook in this area was mixed. Domestic economic turbulence and the low quality of Soviet manufacturing made most enterprises uncompetitive or unable to produce the products of the information age. For example, Soviet personal computers were vastly inferior to Western models, and were subsequently at risk of being shut out of the market by imported and cloned Western microcomputers. The same story can be said about most of the other newer information technologies.

The question of availability and access was also an important factor in the Soviet Union. Prior to Gorbachev's policies of *perestroika* and *glasnost*, information technologies were reserved for the political elite and other trusted cadres. After the

implementation of the Gorbachev's policies, the procurement of information technologies became increasingly dependant upon economic factors, which made them far too expensive for the average Soviet citizen.

The low level of dispersion of information technologies in the USSR and its segregated nature, meant that significant segments of the population had little or no contacts with information technologies. With little opportunity to utilize information technologies, there was a strong risk that certain segments of Soviet society would not have the skills needed for the information revolution, which would hamper their likelihood for upward social mobility.

Since the level of information technologies in the Soviet Union was far smaller than in the West and were disproportionately distributed, leads to the inevitable conclusion that while information technologies will bring about similar effects in the Soviet Union as in the West(i.e. social individualization, informatization), the level and the pervasiveness will be far less apparent and will effect far fewer people.

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services of up to 4,800 bits per second (bps) in its ordinary telephone services. However, William McHenry, a Western expert on Soviet technology, considered this figure as too high and that 2,400 bps was a more realistic number--a figure still far below western standards.¹⁵

Not surprisingly, with the poor quantitative and qualitative level of Soviet telephones, Soviet utilization of phone services was far below Western levels. In 1989, for example, 2.6 billion inter-city telephone calls were made in the USSR compared to forty-f . billion in the United States. Nevertheless, the number of Soviet inter-city calls made in 1989 was a substantial gain from a decade past when in 1970 only 431 million inter-city calls were made.¹⁶

For the Soviet Communist Party and government elite, there was an alternative telephone network run by the KGB. The purpose of this system was to provide high quality and protected lines of communication within Moscow, the republic capitals and other major cities (i.e., Leningrad and Kharkov). The system was composed of two automatic telephone exchanges (ATE1 and ATE2). The quantity of persons permitted access to the KGB network numbered about six hundred for ATE1 and six thousand for

¹⁵ Ibid., p. 31.

¹⁶ U.S Bureau of the Census, *USA/USSR: Facts and Figures*, U.S. (Washington, D.C.: Government Printing Office, 1991), Table 7.9.