

CENTRE FOR INDEPENDENT SOCIAL RESEARCH
ЦЕНТР НЕЗАВИСИМЫХ СОЦИОЛОГИЧЕСКИХ ИССЛЕДОВАНИЙ

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Armament, Migration, and Brain Drain The Military Industrial Complex and Scientific Institutions in Russia

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Part I

THE MILITARY-INDUSTRIAL COMPLEX

In the Russian¹ as well as in the international press, the opinion has been consistently stated that the changes in the military industrial complex (MIC)² of the former Soviet Union will induce a migration of highly qualified specialists of the armaments industry on a massive scale. Recent polls³, carried out in Moscow indicate similar results. These fears find additionally support when one takes into account the decay of the Soviet Army, its nuclear arsenals and the smuggling of nuclear material from Eastern Europe.

These changes, caused by the reduction of public orders and the conversion of armament production into civilian production, these changes, as far as they take place⁴ — would indeed disturb some carefully arranged relations of interests:

- those of the employed, who have to face the new conditions of a market economy;
- those of the militaries, if the military doctrine, based on a constant extension of the MIC, must be changed;
- thirdly those of certain western armaments circles, as far as changes in the Soviet MIC would make a further arming senseless;
- finally the scientists who feel themselves endangered by unemployment and who fear a slow down in technological development.

Under these circumstances, each side is inclined to use based argumentation, in some cases even to overemphasize the situation in order to maintain their own interests.

Three consequences of the expected «brain-drain» are feared: on the Russian side the weakening of creative and scientific-technique potentials, as well as the weakening of the capability of defense, on the Western side the proliferation, i.e. the distribution of highly developed arms technology in newly industrialized countries, in particular in those with an aggressive military doctrine.

But concerning the following statements, a brain drain from the armaments industry as an aspect of a rather normal process of migration can only be hypothetically postulated. There are narrow limits to scientific research: on the one hand the secret transfers of scientists cannot be observed, on the other hand the sensational news of the media⁵ cannot be verified.

Historical analogies too, are only of limited usefulness, for example the migration of armament specialists from post-war Germany to Latin America or to the Soviet Union after World War II. The situation then⁶ cannot be compared with the present situation in Russia, particularly concerning the entire disavowal of research bases, as we shall see below.

The results of those mass polls known to us, which concern the attitudes towards emigration among specialists, cannot be interpreted unambiguously. Polls in present-day Russia serve as support for political arguments but the method of research used in these polls is rather limited. Moreover, the traditional approach of push and pull factors is not an appropriate model for this particular subject, highly-qualified armament experts.

That is why the recent reports concerning the migration of armament specialists from Russia should be considered as methodically inadequate. The available results, based on interviews, would have one suppose that there is no reason to fear a brain drain from the Soviet MIC.

Remarks on sampling and methods

With regard to the problem treated in this paper, only those persons who are of interest for foreign armament purposes could be involved in a brain drain. When one way of looks at the problem that way, a possible readiness to emigration of qualified labour force on a massive scale, i.e. of all those who have a technical or academic degree, is simply not relevant.

For this inquiry, some sixty detailed interviews with specialists from different branches of production in the MIC were carried out. These specialists differ in age, degree of qualification and length of career, but they have not yet reached at the ends of their careers. Our questions concerned personal problems caused by the conversion plans, but they did not touch on all spheres of professional activity.⁷

This is a pilot study and the choice of the group of persons should be considered as a random sample. That having been said, the usual instruments of empirical social research could not be applied here, because it would be difficult to find a totally different sample in this subject. That is why we refrain from giving percentages. Dealing with this subject, statistical exactitude is impossible to fulfill and should not be suggested. But in order to obtain a comparative reference, a series of interviews among scientists of academic institutions in St. Petersburg were carried out. This sample which was socialized and worked under less severe security conditions, allowed the authors to observe a systematically different attitude towards an occupation in foreign countries.

The question then arises as to the nature of the phenomenon of brain drain treated in this paper.

Brain drain is the term used for the process of migration of intellectuals, academics and other highly qualified experts, and this group should — according to the criteria of intentional law — certainly be considered as a group of migrant employees⁸. An enlargement of this group by members of a political counter-elite, which would mean a change in this juridical category is no longer necessary in this case, because the emigration due to political reasons has ceased.

When discussing brain drain one must bear in mind, that this phenomenon not only concerns migration of man, but also a migration of science or knowledge.⁹ The interviews carried out with the MIC-experts clearly show that the problem has

this two facets. This perception is based on the idea that products and potentials of intellectual work would either be destroyed or taken away from those who have a legitimate right to use them.

Depending on the kind of a given intellectual product, its future benefit and its social base, brain drain can be interpreted as:

1. an emigration of highly-qualified labourers and scientists, not willing to return;
2. a so-called «swinging-migration», i.e. a restricted working stay abroad;
3. work on a scientific joint venture, financed by a foreign company, which itself pockets the most of the profits;
4. a migration of labour in nonscientific, predominantly commercial spheres at home or abroad.

From the point of view of the potential migrants dealt with in this paper, the problem was that urgently needed sources of knowledge and expertise would be lost to the home-country. In the first or the fourth variant this loss would be permanent.

Obviously these statements say nothing about the motives of individuals to migrate.

In the study of migration the distinction between push and pull factors is common. This distinction is based on the idea that potential migrants are either forced to migrate by unfavorable conditions in the home country or tempted by the special living and working conditions in the country of destination. It was thus one of the most important questions to examine these special factors which exert an influence on the attitudes of the persons concerned.

Taking the study of the situation in post-war Germany as a comparison, the authors of that study, already mentioned, wrote concerning the motivation of the armament specialists: «They were not expelled by the home-country, the host country induced the migration.»¹⁰

Only after some decades will it be possible to carry out such a study, because at present, research can only collect some evidence about the purchase of scientists and knowledge in individual cases. In this respect, there is a methodical problem. The thesis of the preponderance of pull factors cannot be pursued in a scientific but only in a speculative or journalistic manner.

Therefore the thesis remains, corresponding with the assumptions of the media, even if not always explicitly stated, that migration is produced rather by the difficult economic situation in Russia. Thus this thesis takes on an almost axiomatic character. Precisely this is one of the principal faults of the polls we have already criticized: a motivation, caused by the grave socioeconomic crisis has been imputed as the motivation of those persons concerned. Armaments migrants then seem to be simply a sub-category of economic refugees.

But because this form of migration is first and foremost a transfer of knowledge, the problem is not quite so simple. Therefore, during the interviews it was not presupposed that emigration could be a solution to economic problems. Rather, the interviewees wanted the interviewees to divulge this alternative themselves."

The MIC in St. Petersburg

Some highly-qualified specialists in the MIC in St. Petersburg were interviewed. This city was chosen because it is one of the biggest military-industrial centres in Russia. More than 40 per cent of industrial production there is due to military orders. The military industry employs nearly a third of all local scientists and has more than the half of the high-technology equipment at its disposal.¹² A considerable number of the Russian MIC-institutes are situated there and are concerned with the elaboration of new armament and production technology. Moreover it is well-known that in cities the readiness to emigrate is more widespread. For these reasons it could be supposed that in St. Petersburg a person may try to solve personal problems by emigrating.¹³

On first view the anonymous interviews seemed to confirm the fears regarding a migration of military specialists. In order to clarify the situation of the MIC, some official documents have also been analyzed.

There are a lot of push factors which could cause a brain drain. For example the drastic financial cuts made by the state (for example since the armament orders have been reduced to about one eighth of what they were previously¹⁴); the difficulties in performing the conversion; imminent dismissals on a massive scale; the sinking living standards of employees in the MIC; the uncertainties regarding the future; the loss of some former social privileges concerning health services and supplies of goods and living space; the loosened standards of confidentiality and last but not least the decay of prestige of employment in the armament industry, caused by the changes in values among the population.

Altogether the situation in the MIC could be described as an «uncontrollable decay», which affected everybody.

But it should not be forgotten that the most important push factor, the financial cuts of state orders have lost some of its significance. Due to the pressure by the armaments lobby the Russian government was forced to partially back down somewhat and eventually dedicated a considerable means of its budget to the armament industry. According to a statement by the leader of the Department of Conversion in St. Petersburg, in the third quarter of 1992 there were already enough state orders to use 70 to 80 per cent of the capacities of which nearly half was directly destined to the armaments industry.¹⁵ Thus the problems of the armaments enterprises have been somewhat defused.

Hence the interviews were carried out at the peak of the MIC's crisis. Though the first impression was that there was reason to fear the migration of armament specialists, a more detailed analysis of the interviews and the situation showed that the reasons enumerated above did not have an unambiguous impact on the attitudes of the affected persons. Some other factors, circumstances and motives proved to be far more important in the planning of individual life.

Before we describe personal situations, perspectives of the employees in the MIC and their attitudes towards

emigration, it should be pointed out that the overwhelming majority of the specialists questioned assessed the changes in the armaments industry negatively, even if they did not consider the conversion plans to be bad. But the most highly qualified feared a decline in scientific-technological expertise, which would not be able to be replaced. Two of these specialists were worried about Russia's military force.

The personal situation

The estimations of the specialists questioned in regard to personal perspectives changes in society, in the MIC and in their respective institutes, differ to a high degree.

The members of the overwhelming majority found themselves faced with serious personal problems, in particular caused by sinking living standard. While salaries in the MIC were previously considerably higher than those in the civilian sector, today they are below average. The attempt by some enterprises to solve their problems by introducing various forms of shorter working time, pushed the income of some wage groups below subsistence level. The social security system, often sustained by the enterprise, was threatened by the changes. This aggravates the situation even if the value of these privileges is very strongly contested and even if this phenomenon concerns all the rich enterprises.

The impression of the specialists, feeling that they were simply abandoned, is understandable especially, if one compares their precarious situation today with the security they enjoyed previously.

Professional mobility within MIC enterprises is less developed than in other industries. Only some employees resigned voluntarily, so that enterprises and their employees grow older together. For those employees who are approaching to retirement age, the prospects are particularly unpleasant. Though they believe they have earned their social security and now want to enjoy these benefits, however, they often find themselves forced to make a new start.

The dismissals during the first half of 1992¹⁶ increased worries about the future of all employees, but not all of them feared to become unemployed.¹⁷ In particular less qualified employees as well as women, whose professional status is generally lower, reckoned with being dismissed. A small group of the most qualified specialists (engineers in charge, heads of departments)¹⁸ with rich professional experience not only in the military sector, considered their future to be rather bright. Half of these were convinced that dismissals would not concern them, so that they would continue to work in their usual enterprises and functions.

According to their perceptions, such an optimism depends on how successfully a conversion could be carried out in their enterprises, this concerning in particular those sections of the MIC which manufacture for the military as well as for the civilian sector. The general state of the respective branches of the civilian industry is therefore also important. The crisis in the tractor works for instance hindered the conversion of tank production.

Variants in behaviour in a crisis situation

The imminent decay of the MIC was a surprise to its employees. Few of them had believed that the changes would be so radical. Until summer 1992, due to the government's policy a number of specialists supposed that it would just be sufficient to wait for things to come down, and that then things would return to normal patterns. Those who believed this were the middle-age career-conscious, conservative-patriotic employees.

Another group of interviewees behaved more passively — «swimming with the current» — thought faced with a situation which required a solution. Such behaviour was characteristic for women and for those scientists not directly involved in the production process. They could organize their work more individually all the time, different to those employees whose work was more application-oriented and just a tessera for the entire collective. A settling under changing conditions would be much harder for this group.

Three quarters of the interviewees tried to manage their fate in one way or another. Some of the women had already looked around for other employment as workers, bearing in mind that they could be dismissed.

Some leading specialists had already — in case of emergency — an offer at their disposal, frequently made by the private sector. There they were already earning without giving up their jobs in the MIC, but many were prepared if necessary to give up their jobs in

the MIC. It should be remarked here that in many MIC-enterprises a migration of younger up-and-coming employees had already taken place.

The most qualified were of course particularly optimistic. Some of them, predominantly heads of departments stated that they were actively involved in constructing civilian production, for example in transforming of former collectives into scientific or projection departments without armament profile. Quite a few were absolutely convinced that a conversion in their enterprises could succeed and that they could play a leading role, even under the new conditions.

Those who do not want to go abroad

Despite a possible lost of employment, the rapid sinking of living standards and uncertain future not a single (!) respondent mentioned emigration as a realistic solution for himself. Moreover, hardly anybody had thought about this alternative.

At least half of the interviewees excluded an emigration as a means of solving their personal problems. Though the

motives were quite different for various groups of employees. For the less qualified, especially women, the lack of abilities to compete was decisive. This motive was lacking in the answers of highly qualified specialists with long-standing experience, but could be found in the answers of some heads of departments who were occupied rather with administrative matters than with science.

Hardly any of the respondents could imagine living and working abroad, especially if they did not have any foreign language abilities. It was evident in the answers that an emigration would involve considerable difficulties of assimilation in a culturally different environment. It must be noted that the respondents, even if they were ready to consider an emigration hypothetically, would behave in a different manner in reality because all of them described those assimilative difficulties as insurmountable.

The above mentioned patriots rejected all suggestion of emigration. Some of them condemned emigration in principal, to others it seemed inconceivable to leave when their home country was experiencing such difficulties.

Those who excluded emigration consciously and took their situation for sufficiency stable and promising were exclusively the most qualified employees, who were certain of their future.

Professional opportunities abroad

Although the respondents had not thought about emigration before, this issue was proposed during the interviews, in spite of the reservations the interviewers had about inducing argumentation patterns. The respondents remarks were rather abstract and their ideas were not very concise. Bearing this in mind the high number of armament specialists referred to by the media as considering migration seems not to be plausible and could well be due to inappropriate methods of inquiry.

The results we have to hand do not give any reason to believe that Russia will face a remarkable emigration of armament specialists. Those «positive attitudes» mentioned in the mass polls with regard to the emigration leading to opposite results should rather be interpreted as indications of an extensive discontent about the present situation. The consistent conclusion was not that emigration is really intended but that emigration is perceived as a feasible alternative.

However, these attitudes could play a more important role if the situation suddenly worsens, contrary to all optimistic expectations.

Why are the discussions mentioned above described as abstract? One respondent's answer serves as an illustration: "In the MIC all the colleagues have a prisoner mentality. We sat in a gilded cage, but we had to pay for our privileges with a part of our spare time. Most of us can't imagine living outside this cage. If we were set free, we would mourn what we had lost.

These people have indeed always been keepers of secrets, and this fact played a major role in their life and underlined their importance in their own eyes and in those of rest of the population. That is why the question of emigration often was greeted with a complete lack of understanding. Up until now they had been convinced that the prevailing system of confidentiality simply excludes any thought of emigration.

Despite an abstract discussion of this issue, a discussion which would have been unimaginable for most of the interviewees a year ago, nearly all the specialists considered themselves as competitive and able to come through changes, even in analogous foreign enterprises. But it would be difficult to prove their high qualifications (certificates about inventions, publications, etc.) because their previous occupations were shrouded in so much secrecy. Nevertheless, they believed they would be able to furnish evidence or to prove their abilities in a short probation period.

All the respondents had little knowledge of the real working conditions and the demands made of specialists in foreign countries because they had never had the opportunity to travel abroad and they did not know anything about the organization of work in respective foreign companies. Nonetheless, they were of the opinion that they could estimate their qualifications and their competitiveness objectively. This is due to the fact that an important part of their work was to analyse the analogous western conceptions and the convictions they always had to produce work superior that in the West.

But only a small part of this professional elite was able to realistically estimate how integration into a foreign production organization could be possible. Their professional qualities enable them to solve unusual problems, but they are shaped by the peculiarities of the Soviet patterns of production organization. These qualifications are not appropriate in a system based on different principles of organization and a different structure of the division of labour. There is reason to assume that the work of some of the respondents has international quality but it depends on the specific Soviet conditions and cannot easily be continued under more comfortable but more severe conditions.

The variant of a permanent emigration, involving settlement abroad, was always bluntly rejected, even hypothetically. Only a temporary contract was considered as a conceivable possibility. Nearly half the leading employees and the heads of departments did not exclude such a possibility at least theoretically, but only consider employment in their respective discipline and at their level of qualification.

The motivations for considering temporary employment abroad at least theoretically were in particular of an economic nature, which approximates to the behaviour of «wait and see». An important role was played by the following motives: the possibility of working under different, more comfortable conditions in order to develop one's talents; professional ambition and finally the chance to demonstrate one's professional level to others and to oneself.

Those who could imagine to work abroad, thought about industrialized western countries. Only two leading specialists preferred Third World countries. There too, the expected assimilative difficulties in a completely foreign cultural surrounding appeared to be a great obstacle. One of the interviewees stated that this would be an alternative only for

«tricksters» who had no prospects either at home or in the West. This estimation derives from the low prestige of these countries in the eyes of Soviet scientists in regard to the working conditions, so that these countries are out of the question for «true» specialists. Those who were attracted by these countries are suspected to prefer them only because of the payment and the expected social status.

Is a brain drain from the MIC realistic? Slow down and habituation factors

To answer this question, the brain drain in the sense of «intelligent person» shall be elucidated. Therefore it is important to note that the intellectual potential of the MIC is mainly concentrated in a few principal institutions and «scientific enterprises», i.e. in the research, projection, design and experimental sectors, without being homogenous.

Four levels of employees in the MIC can be distinguished: an administrative top-level, heads of department in the middle and lower levels, leading specialists without administrative functions and finally those who carried out an assigned task with rather low qualifications.

Although there are also some highly qualified specialists in the administrative top-level, they do not belong to the «brain» in our sense, because of their administrative occupations. They hardly participate in conceptual work, even if final reports must be signed by them. Scientific degrees and titles were given to them because of their positions rather than their scientific merits.

Neither can the members of the fourth group be described as «brain», since their functions are very limited and their work can hardly be seen as creative.

Those who are of interest, due to their knowledge and their scientific or technical capabilities concerning armament production, are rather situated in the two middle levels (heads of departments in the middle and lower levels, leading experts) — with some flexibility and movement within these two groups.

But is this elite really interested in employment abroad? Our inquiries show that despite the present transformation processes the MIC-elite in St. Petersburg is not worried about its fate and is not preparing to emigrate.

Moreover, there is no indication of a forthcoming emigration of less-qualified specialists. But this has to be judged in a different context. These employees are permitted to travel abroad, but they are not necessarily interested in maintaining their professional status. Given a worsening of the employment situation, this stratum would be affected in Eastern Europe as well as in Western Europe and could find jobs only outside the armaments sector. Such an emigration would rather be an ordinary emigration for economic reasons than a brain drain.

The widespread fears in regard to a considerable brain drain from the Russian MIC are thus unfounded in view of the results at hand.

According to the results of our case study neither the pull nor the push factors were sufficiently developed in contrast to the above mentioned slow down factors, which changed the direction as well as the effects of the push and pull factors.

Moreover, it should not be forgotten that an entire disbanding of the MIC has not taken place.¹⁹ A number of persisting and habituation factors prevent radical solutions. The most highly qualified specialists, the majority over 50, have been employed in the same enterprise for over 20 years. They are unable and unwilling to adapt and feel themselves much too old to make a fresh start. The differences in the structure and organization of the armaments industry in the former Soviet Union compared with that in the West have equally inhibiting effects. A commencement of work of Soviet MIC-«brains» abroad would be restrained by these factors, factors which have been ignored for a long time.

There remains the issue of the protection of military secrets and the related ban on travel abroad. Those arrangements which prescribe a certain waiting period to persons formerly entrusted with confidentiality will probably be sustained, until the knowledge is of no further interest to the West.

References:

¹ Neither in the German nor in the English translation it is clear that in the language of the present day a precise distinction between «russkij» and «rossijskij» is observed. The former refers to all things and people standing or living within Russian territory, the latter refers to the Russian ethnic community. In the Russian version the notion «rossijskij» is used in order to avoid discrimination against people who live on Russian territory without being Russians.

² By this term the totality of scientific or industrial armaments enterprises is meant, hereinafter referred to as «MIC», following to the usage of the abbreviation «WPK» (voenno-promyshlennyi kompleks) in the public discussion. But inside the «MIC» neither that notion nor the abbreviation is used. Their own term is either «oboronka» («obonka»= defense) or «devjatka» (Nine, according to the number of Soviet ministries which belong to the Soviet armaments industry).

³ Tichonov, V., «Oboronka» pakuet chemodany. In: Moskovskie novosti, No. 41/1991

⁴ This study was carried out in the spring and summer 1992 and is oriented towards the question of the plans of conversion of the Russian government, which were still valid in spring 1992 (see: Ozhedov, A., Rogovskij, J., Jarjomenko, J., Konverzia oboronnoj promyslennosti i preobrazovanie ekonomiki SSSR. In: Kommunist, No 1/1991: Hoehmann, H.H., Schroeder, H.H. (Eds.), Ruestung, Modernisierung. Reform. Cologne 1990). It is now doubtful whether these plants will be

realized and how fast this will and can be done. The radicalness of the reforms, hitherto rather chaos inducing, shall be toned down (see: Huber, M., Direktoren draengen zur Macht, In: ZEIT, No. 45/1992). This led to the fall of the responsible Prime Minister Gajdar in December 1992. Since then, the attitudes of the personnel treated in this paper may have changed considerably. Therefore, a further study in six months would be desirable.

⁵ For example: «Lebenswerk in Truemern», in: Der Spiegel, No. 9/1992, pp. 146-150

⁶ See Albrecht, U., Heinemann-Grueder, A., Wellmann, A., Final report on DFG-projekt «Migration of German scientists and technicians to the Soviet Union towards 1945», Berghof Institute for Conflict Research, 1990

⁷ These interviews should be regarded as problem-orientated conversations by a standardized frame of questions. Neither contents of the professional activities were touched on nor did the German colleague participate in this conversations. This was done in order to take into consideration that until recently it was unimaginable for the interviewees that something related to their work could be discussed openly without permission from above and without the presence of the security services.

⁸ Blaschke, J., Flucht und Entwicklung in Osteuropa. In: Blaschke, J., Germershausen, A. (Eds.), Sozialwissenschaftliche Studien ueber das Wefluechtlingsproblem, Bd. 1 Berlin 1992, p. 149 foll.

⁹ Albrecht, U., et al., I. c., p. 6

¹⁰ Albrecht, U., et al., I.e., p.8

¹¹ In order to avoid that link between the delicate situation in the MIC and an emigration from the beginning, the interviewers could only touch on this issue in an indirect way. Cf. the elucidations in the annex.

¹² These data are the lowest which are mentioned at the moment.

¹³ Cf. Voronkov, V, Leningrad/St. Petersburg — Metropole und Zentrum Migranten. In: Migration. A European Journal of International Migration and Ethnic Relations. No. 11/1992, pp. 59-80.

¹⁴ Nevskoe vremja, 8. May 1992.

¹⁵ «Sluhi o raspade "oboronki" sil'no preuveliczeny», in: St. Petersburgskie vedomosti, 29 August 1992.

¹⁶ «Last year, the armament branch (in St. Petersburg, note by the authors) lost some 30,000 men, but even in the first two quarters of this year, they lost 20,000», in: St. Peterburgskie vedomosti, 29 August 1992.

¹⁷ In Russia, unemployment is still not taken as seriously as in Western Europe. As long as there has been no experience of longtime and mass unemployment, the problem is perceived rather in an abstract way and no place has been conceded to this occurrence in the planning of individual life.

¹⁸ These heads of departments are highly qualified persons (engineers, scientists) but they also fulfil responsible administrative tasks.

¹⁹ Rosnickij, O., Muki konversii. In: Nezavisimaja gazeta, 28.10.1992. Even the head of the government, Tchemormyrdin, in charge since December 1992, seems to support the existing MIC-structures.

Part II

THE CRISIS OF THE RUSSIAN BASIC RESEARCH

An US-american spy lost his way in the Taiga.
After wandering around for a long time he finally found
a nomad's tent and besides it a sitting Tchoukchee.

The spy asked him:

«Do you speak English?»

«Yes, I do» he answered, « but it's absolutely useless to me.»

(A famous physicist's answer to the question of
whether his qualification could meet international standards)

The generally supposed push factors do not have the same effects on the different scopes of employment which are assigned to the «brain». It is true that economic motives are widespread these days but different scopes of employment show different patterns of behaviour. Highly qualified armaments specialists for instance are less willing to emigrate because they are convinced that they are professionally superior to their civil colleagues and that they could drive them out of the labour market.

Approach

In order to be able to establish in how typical the attitudes and behaviour patterns of the experts of the MIC are, some members of the scientific elite, concentrated in the «Academy of Sciences»²⁰, were also interviewed. The methodical approach of the first study was maintained, so that correspondences and systematic deviations could be discovered. But this time, it was possible to exert a greater influence on the choice of respondents.

The scope of the inquiry should be limited to the behaviour of the scientific elite because pertinent studies had shown that only excellent and promising scientists were relatively able to meet competition on an international scale and thus to obtain employment, corresponding to their qualifications and scientific interests.²¹

Fifty-two scientists from eight academic institutions in St. Petersburg were interviewed: specialists in basic research in biology, mathematics, physics and chemistry. The main criterion for the choice of the respondents was their potential for world-wide recognition in the near future, perceived from within their institutions. This determined the age-composition of the sample. Firstly the age-limit was 50. Within this two sub-groups became evident, those who still have a long career ahead of them and those who were in the early stages of their scientific careers but had already attracted some attention.

The choice of the sample was made indirectly. In the above-mentioned institutions, some leading colleagues were asked to list the most successful respectively the most promising colleagues. Afterwards, those scientists who had been mentioned by the majority of experts were interviewed. It is hoped that the respondents were in fact representative of the scientific elite, so that possible «typical» modes of behaviour could be allied specifically to social strata. The chosen scientists are not only scientifically outstanding but they participated to a high degree in leading committees and scientific councils. Thus it could be expected that by interviewing them one would obtain some information about external factors which influence attitudes towards migration.

The following subjects were mentioned in the interviews: the research situation in the respective branches; economic and organizational problems; changes in the personal circumstances of the respondent; his opinions about the institutional crises within the sciences; his personal attitude towards the new conditions and the possibilities of emigration.

The situation in the academic institutions as a push factor

Nearly all the respondents mentioned some significant deterioration concerning their work situation during the last two or three years, in particular caused by disastrous budget cuts.

These statements were confirmed by objective data. According to the Political Institute of the Russian Parliamentary Center, only 20 to 25 % of the equipment needs of the scientific institutions can be met, and with regard to particularly important pieces of equipment this figure may be as low as 10 %. Moreover, the opportunities to receive scientific information have decreased dramatically, because in Russia only a third of the scientific-technical literature is available and due to the lack of foreign currency, the subscriptions of scientific periodicals have had to be cancelled.²² Scientific contacts are generally limited. This affects official trips home and abroad as well as conferences, seminars, and scientific publications.

The incomes of scientists are markedly low. They are estimated to amount to 60 per cent of average incomes in the industry and they cover less and less of the cost of living. Most of the interviewees stated that they earned around 3.000 to 4.000 roubles, which in October/November 1992 was roughly US-\$ 10, whereas the poverty line was officially 5.000 roubles.

The cuts in the budget led inevitably to a reduction of staff in the scientific sector, including dismissals and voluntary resignations. In 1991, the number of scientific employees in the scientific institutions in Russia diminished by about 266,000 and in the first two months of 1992 in Moscow alone about 120,000.²³

Those who remain are forced to find other sources of income which had negative effects on the atmosphere within the

scientific community and at the professional level.

Scientific schools have been destroyed, because their most important representatives spend so much time abroad. Furthermore talented young scientists are less inclined to pursue a scientific education. Personal interests are becoming more and more commercially oriented.

Principal types of behaviour in crisis situations

Difficult conditions are not a sufficient reason for the academic elite to change into commercial structures, what was seen in the case of a number of highly qualified specialists of applied sciences or in the MIC. One young scientist remarked : «I suppose, our institute will be maintained and that we shall be able to continue our scientific work, but I won't solve my problems of everyday life.» Another scientist, already established, commented that a scientist has no choice, he will always work as a scientist.

This is perhaps less valid for young scientists who have just started their careers. They have not yet invested so much of themselves that they will continue to sacrifice themselves to it now. For them, there are still other ways to use their abilities, other ways of self-realization. A physicist 31 years old, told the following story. «In our institute there was a really talented group of students, directed by one of the best known academics, and certainly, they would have made some important discoveries. But they couldn't live with that low income and they didn't want to. Thus, most of them went into business. These young people are lost to science.»

Under the above-mentioned conditions, these patterns of behaviour are widespread:

1. To look for additional scientific work, which should have some concrete purpose. Thereby, an additional income is gained, but concentrated away from basic research.
2. The setting up of economically independent research organizations within scientific collectives. Hereby, some additional incomes are guaranteed and moreover, the missing finance of the basic research can be obtained from the profits. But these opportunities are not offered to all the scientists and they are only open if the scientifically feasible meets a concrete demand.
3. The intensifying of international contacts. This pattern is particularly interesting because it concerns the «brain-drain-discussion». However, in this case, the preservation of the Russian sciences by foreign means is meant, not its incorporation into the international science.

From integration to new patterns of behaviour

Those frightening forecasts about the emigration of scientists delivered by the media are founded on a direct extrapolation of increasing numbers of emigrants and on some mass polls. Besides the methodic faults, frequently such reports serve consciously dramatize the situation.²⁴

It is generally known that until recent times, an emigration was only possible for some ethnic or religious minorities, primarily Jews. There was a great number of scientists among them. However, Jewish emigration is gradually decreasing, due to the radical changes in Soviet society.²⁵ This is also due to the fact that the policy of anti-Semitism by the government has ceased and, on the other hand, that practically all those whose will to emigrate was strong enough, had already emigrated. The peak of ethnic emigration was in 1990, and afterwards it decreased markedly. Nowadays, the emigration behaviour is no longer determined by ethnic affiliation.

Only a small share of those scientists who emigrated due to ethnic motives could find employment in the scientific sector. An even smaller number were able to find employment in keeping with their qualifications and professional status.²⁶ This can only be described as a brain drain in the sense that migration from science to other domains took and is taking place. This represents a general loss to science.

Concerning the mass polls about science emigration²⁷, it must be pointed out that, as shown in Part I of this paper, you can not draw definite conclusions from mere expression of opinion about real patterns of behaviour, especially if they are susceptible to changing circumstances.

The results at hand lead to the conclusion that permanent emigration of Soviet scientists will fade out. On the one hand, there is not a high demand for scientists with these qualifications abroad, and on the other hand, some previous **reasons for** emigration have vanished and new possibilities of self realization have emerged.

Whereas permanent emigration was a final decision within the conditions of the «closed society», nowadays there are new alternatives. Until recently, trips abroad were reserved

for a narrow circle of scientists with a very high scientific and administrative status. But within the last years, some 30 or 40 per cent of the members of the world-famous academic institutes in St. Petersburg have been abroad as part of their jobs. In one institute it was impossible to carry out interviews because all the promising young scientists were abroad.

All those who were able to use these opportunities stressed the advantages of a «swinging»-migration as opposed to permanent leave. But it must be stressed here that these work stays and relationships can only be financed by the West.

«Swinging»-migration: brain drain or maintenance of talents?

Only one of 52 respondents declared his readiness to emigrate permanently, although he had not planned it yet. Without any exception, all the respondents stressed the enormous attraction of professional trips or limited work contracts abroad.

A leading employee of a physics institute explained that all the employees were occasionally sent abroad as emissaries to maintain the institute's standing. Otherwise the institute would lose these employees in the long run. This opinion is shared by nearly all administrations of institutes occupied with basic research, as far as this is possible. The chemical industry for instance is in a less favourable position.

This form of migration is not understood as a brain drain by the scientists, but on the contra as a means of «conservation» of scientific potential. They take the view that these work relations should be seen in the context of «international science». There would not be a loss to «international science» if Russian scientists work abroad, rather there would be a loss to the Russian economy. One respondent was astonished that the Russian press and the Russian government worried about these temporary migrations because «nobody in Russia needs our work today». There was a prevailing opinion that science was more endangered by forced migration to other branches than by movements to foreign institutes abroad.

The crisis in Soviet science, the mentality of a typical Soviet scientist

Today one is faced with a paradoxical situation: strong push factors and equally strong pull factors do not engender an emigration or a higher tendency to emigrate. What does hinder the Russian scientists to emigrate?

Generally, this barricade is due to the impossibility or the inability to surmount high social-cultural barriers. In this case this is related to ideas about the advantages of an economy organized according to socialist patterns. Though it was not said openly, the judgements made in the interviews lead to this conclusion.

This is primarily related to the widespread conviction that Soviet-Russian science is superior. The respondents believed their personal qualifications and productivity to be as high as those of other Soviet scientists. Moreover, the sense of belonging to a «scientific community» by which the scientists feel acknowledged and understood, was judged positively. Such a creative milieu or, to be more exact, the idea about it, is on the one hand conducive for an identification, but can lead also to intellectual indolence.

In this context it should not be forgotten that the Soviet basic research was organized separately from economic matters, so that pragmatic attitudes were disapproved of within the scientific community. Scientific efforts were thus **almost exclusively** valued by inner-scientific criteria without any consideration of economic conditions or marked developments and demand of scientific results.

Some peculiarities of Soviet science should be regarded in this context:

- the mass character and the systematic over-staffing of scientific institutions;
- the local concentration;
- the exclusively collective form of cooperation;
- the support and promotion of like-minded scientists in a certain scientific institution administratively directed by a high-ranking scientist;
- the predominance of non-scientific forms of competition;
- the predominance of verbal communication, due to the lack of technical means, other means of communication and other scientific infrastructures.

Until now, these peculiarities have constituted the normal and therefore appropriate conditions for the overwhelming majority of scientists, providing a feeling of self-realization and acknowledgement by the scientific community.

Thus one professor of physics underlined the efforts of the domestic science: «Regarding the scientific standard of our work, ours is certainly higher than that in the West. Physics is very strong in Russia because in one single location we have assembled the bulk of scientists. Concerning the concentration of scientific potential, we are certainly stronger.»

Another physicist explained the quality of scientific efforts by the dependency on their mass character and over-staffing. The basic ideas were figured out by a few geniuses, but for the realization thousands of scientists are needed. If this mass-basis is destroyed, science as a whole would be destroyed.

Despite certain admitted advantages of the Western infrastructure, like computerization or more developed information systems, the respondents preferred their customary conditions. In case of a lack of clarity a colleague with long-standing experience could be consulted immediately and in no time all those questions could be solved, which would otherwise take some weeks of work.

Personal verbal communication within this scientific community, guided and accompanied by some leading authorities, is held in much higher esteem and considered more positively than technically perfect but anonymous structure of communication like that in the Western scientific institutions.

For a foreigner, this valuation of the Soviet science system seems to be an idealization. But it should be remembered that the internal situation is not always without difficulties. Intrigues, arbitrariness and non-scientific competition are often perceived and expounded, but here we are comparing the Russian forms of communication with Western scientific institutions. This considered, one of the leading scientists described the former circumstances of Soviet science as «hothouse conditions» which scientifically offered more favourable conditions than any other organizational type of science.

All this created a type of social character, a «mentality», which caused a lot of problems for Soviet scientists travelling abroad. Their personal and professional qualities are neither promoted nor needed abroad. «They don't appreciate what they should appreciate» stated a 45 year-old chemist.

A famous biologist remarked that emigrants abroad were employed like understudies. He himself refused an offer to work permanently in Australia because he could have solved the problems which he would have had to tackle within three months, whereas only in Russia, he says, could he find «really sophisticated problems».

The different reactions to the issue of stays abroad throw some light upon fundamental differences in mentalities. On the one hand there are some lively, mobile personalities, who have less problems working in the West, on the other hand there are some «true» scientists who find it hard to adapt. Some stereotypes emerged here, particularly important for those «true» scientists, in order to define themselves. From their point of view, mobility and high qualification can not be considered as connected. That is why everyone who tries to get an orientation on the labour market is considered as a member of a lower class than the «true» scientists.

This is related to the special socialization in Soviet science which induced a special idea about science: According to the Soviet conception, science is rather «art» whereas it is «business» in the West. Based on this understanding, different modes of behaviour are interpreted in the frame of some stereotypes. Thus the average US-american scientist is mobile and effective but completely different to the outstanding «true» Soviet scientist.²⁸

Although the Soviet scientist is unwilling or unable to conceive science as «business», because it is «psychologically unpleasant to prove one's own qualities to a less competent man» as one chemist stated, the present changes are destroying the customary stereotypes in behaviour. Many respondents stressed the point that there were already several signs of a transformation of scientific organizations, and many scientists are becoming familiar with the market which could only happen in the West. There are obviously already some effects on communication within the scientific community. As some of the respondents remarked with regret, others with satisfaction, some colleagues had become more withdrawn, rarely talking about their ideas or consulting others. Two very different reasons were given to explain this development: ideas are now considered as merchandise and their own time as well as the time of others is worth more.

Our opinion and that of the respondents is that these are signs of a «westernization», or «commercialization» of the Russian science in its organizational structures as well as in the values of the scientists. They are now forced to define themselves no longer principally as «seekers of truth», receiving some material and non-material payments, but to an increasing degree as «instrumentalists» who have first of all to preserve their material basis in order to be able to seek the truth. This communication, also determined by the market, creates a completely new form of competition.

These abrupt changes, caused by the Soviet-Russian reform policy, have produced an institutional crisis in Soviet science. It became quite evident from the interviews that the scientists are today looking for a new place in changing structures. Their fate will depend on how this crisis develops. Today this crisis acts as a push factor, even if it's only result is to stimulate a «swinging»-migration.

Outlook for the future

Today a process of transvaluation of traditional values is taking place in Soviet science in which it becomes possible to refer to Western values as well. Until now, this comparison has not been favourable to the Western science. That is why a permanent work stay abroad is hardly attractive to Soviet scientists.

But «swinging»-migration is already established, which offers, according to the interviewees, a chance to preserve Russian scientific potential. On the other hand this could be a less painful mode of acclimatization to unusual work conditions abroad, followed by other forms of migration.

The future of Russian science depends thus on which process will happen faster; the adaptation in the form of «swinging»-migration or the overcoming of the institutional crisis by restructuring scientific activities in Russia, so that they are similar to those in the West. If the transformation of Russian science lags remarkably behind the above-mentioned process of adaptation, there is a high probability that Russia will lose its scientific elite. Here as well as in the case of the armament specialists, the creation of joint ventures, financed by the West, could offer a solution.

References:

²⁰ In the German version «Akademie der Wissenschaften».

²¹ Cf.: Lazaris, V. et. al. «Uczenye Mesto raboty.» Tel-Aviv 1988.

²² Terechov, V., Rasstavaniya bez ljubvi, no s pechalju. In: Rossijskaja gazeta, 22 August 1992. According to Terechov's estimation the information system in science in the US was, even in 1990, hundred times better than the Russian. In 1992 a thousand times, if such quantitative comparisons make sense at all.

²³ Terechov, V., I.e.

²⁴ See for instance Kugel', S.A., «Kak skazal Bonapart: "Oslov i yuczenych — na seredinu!"», in: Nevskoe vremja, 20

February 1992. He does not agree with the results of inquiries and general suppositions among the public, according to which 80 per cent of all scientists want to emigrate, concluding from his own polls that only a quarter is willing to leave the country. Other polls talk about 6 per cent willing to emigrate and 50 per cent willing to commute. The existing polls thus deliver very contradictory and widely differing results, which can't be understood methodically. They are therefore not suitable to serve as a basis for further research.

²⁵ The zenith of Jewish emigration wave seems to be over 1986: 914; 1987: 8,143; 1988: 20,082; 1989: 71, 509; 1990:190, 000; 1991: 145, 000; c.f. Tinguy, A. de, Emigration de l'ex-URSS : la grande inconnue, in: Esprit June 1992. This corresponds to the data given to the authors by the OVIR-office in St. Petersburg (Office of Visa Affairs). 1988 resp. 1989 the total emigration was about 2,500 resp. 6,200, in 1990 it amounted to 15,400, with 14,000 Jews among them. This number decreased in 1991 to 8,400, 4,600 Jews among them. In the first eleven months of 1992 6,900 people emigrated. Cf. Nevskoe vremja, 15 January 1993; Smena, 16 January 1993.

²⁶ Unfortunately, there are no specific inquiries on this subject, besides the Jewish emigration to Israel. As long as these do not exist, one has to refer to experiences stated in the interviews which have since been confirmed by other inquiries and works of journalistic character.

²⁷ Cf. Terechov, op. cit.

²⁸ Cf. Lazaris, V. et. al., «Uczenye. Mesto raboty.» (Work Places in Science), Tel-Aviv 1988, p. 11. It can be demonstrated by literary examples that this widespread stereotype is indeed so strong that it can be decisive for acting. Cf. Oswald, I., Der Staat der Wissenschaftler. Das Gesellschaftsbild der sowjetischen wissenschaftlich-technischen Intelligenz in der wissenschaftlichen Phantastik der Sowjetunion. Berlin, 1991.

Part III

APPENDIX: METHODS AND QUOTATIONS FROM THE INTERVIEWS

Methods. Instructions to the interviewers²⁹

At the beginning of the interviews, the aims and the parties involved should be explained and introduced. The following items are important:

- The Institute for Independent Studies is indeed independent, it pursues merely scientific interests and the obtained information is exclusively used for the institutes analysis of the situation.

- The inquiries are of exploratory character in order to determine the problems of employees in the MIC in relation to the present conversion and transformation of the economy; thus, the thoughts and models of behaviour of those concerned by the changes are of interest (...).

- The inquiries are principally anonymous³⁰, but the respondent should be asked whether he would have any objections to be asked again after half a year about changes in his professional situation.

If you want to record the talks on tape, ask for permission and propose to interrupt the recording each time the respondent wants to make a remark which he considers to be not «suitable to foreign ears»,

Do not forget that you are a scientist and not an interviewer. Your interviewee is regarded as an expert in the matters dealt with here³¹. You should try to understand his opinion thoroughly. Do not hesitate to put a question if you have not understood something entirely.

Do not press the respondent, let him finish speaking. Only in case of a digression from the subject should you intervene. Encourage the interviewee by words and gestures. The atmosphere should be relaxed but professional. It depends on your conduct and your sense of tact how open and complete the answers will be (be sensitive which questions you should not insist on!). Bear in mind that the respondent regard himself as a holder of confidentiality and is afraid to divulge some superfluous matters. Do not press him by questioning things which could evoke suspicion or his previous reservations³².

Ask the interviewee to tell you something about himself. The following data should be noted:

- sex;
- age;
- social origin (parents; profession);
- marital status (children, profession of spouse);
- place of origin (citizen of Leningrad? since when?);
- education (when finished, degree?);
- period of service in the MIC and enterprise;
- qualification and status;

Which branch of industry does the respondent believe this enterprise belongs to? What would be the equivalent

civilian branch?

The conversation could then continue as follows³³:

1. What has changed to the respondent in recent times in his enterprise (working conditions, content of work, income, uncertainties about the future, imminent unemployment, etc.)?
2. What does the respondent intend to do? What does he see as his choices? What would he do after leaving voluntarily the enterprise or being dismissed? Has he already taken any steps?
3. What does the respondent think about the possibility of looking for work abroad? About emigration generally? Has he already thought about this? If not, why not? Under what condition would he consider emigration?
4. If the respondent does not refuse the idea of emigration in principle, what would induce him to live and work abroad?
5. Has the respondent been abroad, when, where and for what purpose? Has he relatives or friends abroad? How does he imagine living and working conditions there?
6. What work would he do abroad? Does he believe he would have a chance to work in his profession? If this is the case, how could he prove his qualifications?
7. To what extent does he believe his intentions and modes of behaviour to be typical)?

Do not forget to ask at the end of the interview how the respondent feels about the interview which difficulties the questions have caused and what advice he would give for further interviews.

You are asked to note anything else which could be important to the inquiry, unforeseen matters as well. Moreover, we would appreciate your thoughts about the interviews. Try to notice the differences between the interviews and consider their reasons.

Quotations from some of the interviews. The MIC-specialists. The present situation in Russia

«My colleague, doctor of sciences³⁴ with a world-wide reputation, earns 1,700 roubles per month. I'm occupied with writing my thesis (i.e. the habilitation), but I do not know whether this is worth the trouble because nobody in Russia needs science and scientific works.» (group leader, aged 38)

«Despite our important and rich experiences, we're no longer needed. Our knowledge, our skills and our abilities seem to be inapplicable and the most worrying is the uncertainty of the future» (leader of a laboratory, 38).

«There are laboratory leaders who have gone into business. They can be replaced but only by less-qualified scientists. Really clever people are gone, but where they are now, they not using their qualifications.» (head of department, 45)

«We were living in clover for a long time.»³⁵ (leading engineer, 45)

«Probably one should look for another job. But at present my situation is such that: I will stay on, as long as I'm not dismissed» (engineer, 32)

«For me, the bad material situation is not the worst. The worst is the hopelessness. No money, no interest in work, no desire to do anything at all» (higher scientific employee, 47)

«There will be further armament orders. I'm optimistic that things are looking up. I'm a gentlemen of the old school and thus I'll stay on my place and wait for better times, I'm not too down about it.» (engineer, 28)

«Early this year there was some confusion, but now people have realized, that the state can't survive without the MIC. The tensions were simply generated by the media.» (engineer, 38)

Working and living conditions abroad

«I estimate my chances realistically, and believe that there's nothing to be gained in the West. Firstly, I'll hardly be able to compete with highly qualified specialists, secondly, I'm sure that there won't be offers of interest, because Western enterprises have no interest in raising this competition: In any case, my profession will not in demand, my specialization is much too narrow.» (engineer, 30)

«For a lot of reasons, there are no opportunities for me to work abroad, in particular because I was concerned with top-secret information. If I were Jew, I wouldn't have problems, but I'm not Jewish and none of my relatives are Jewish. Therefore, I simply can't emigrate.» (head of department, 45)

«Since I've signed³⁶, thoughts about emigration never occurred to me.» (leader of a laboratory 38)

«None of us have emigrated and nobody has gone to work abroad. We all were socialized in the spirit of secret enterprises and therefore such intentions do not exist and nobody talks about it.» (engineer, 45)

«I served three years as a soldier in the GDR and could move freely. I can imagine that life could be better there, but the Russians can't settle in there because everything is different: another psychology, another culture, different customs and different traditions. We and you we're people from different planets. You ought to live where you're born and grown up; even if things are bad today. I am not saying that due to patriotic sentiments. But you should consider your possibilities realistically. I'm not against work contract for about two or three years abroad. But a foreign enterprise here, offering valuta³⁷, would be better, and we would go abroad for holidays.» (leading engineer, 48)

«On the one hand, we have a really strong foe image, all of us here in the MIC have worked under this impression. And now, we are supposed to be financed by them? On the other hand there are some more obstacles for me, for instance the

language barrier, age, the inner unease because of the different conditions. By example, I was recently in Lithuania and felt uneasy even there — how would it be in the West!» (deputy head of department, 51)

«I don't want to emigrate, I can't imagine a life abroad. I want to live in Russia, life is interesting. I want to know what's going on in this country»/ (leading technical designer, 35). «In any case I would only work in my profession, I won't become a dishwasher.» (higher scientific employee, 38)

«I suppose it's more interesting here, more possibilities. I don't like the foreign specialist's devotion to authorities.» (leading engineer, 45)

«Material conditions are maybe better there, but that doesn't attract me. We only have some foggy ideas about the other aspects of life there. Perhaps you can go abroad for one or two years. I believe that our specialists and qualified workers are the best educated and most professional of all. I have seen some Western engineers and workers here and I saw how helplessly and superficially they worked. They couldn't help us at all, finally we had to do everything again » (engineer, 37)

«We compete without our foreign colleagues. We use any information which could help us. In case of war we must have a reserve, mustn't it? What's the use of talking to them on this level?» (head of department, 45)

Scientists in academic institutions. The present situation in Russia

«Real wages have decreased considerably. Thus fewer young people decide to work in science since they couldn't exist on the money. Furthermore, there was a big migration abroad recently. Most of them decided to stay for contract work and not to stay permanently. Everybody here is looking for those contracts.

I don't fear a dismissal because I don't work for money but because of the scientific exchange, and I could find this outside the institute as well. » (leading female engineer, 26)

«Scientific contacts inside the country are negligible. Recently even the seminars in the institute have ceased, there aren't any incentives to participate, either moral or material. Even those in charge have no interest in seminars.

The intensity of individual work has increased instead. Everybody in the laboratory is trying to adapt to the Western image. But this has negative aspects as well. There are no longer scientific collectives. Common science projects are have vanished. Now we work in groups of two or three, finding each other by personal interests.» (higher scientific employee, 42)

«Income has decreased considerably, but it is enough to nourish the family and everything else is not that important.

Orientations have changed. The colleague's opinion is no longer important, but publishing in foreign periodicals. One follows the market and this has effects on the scientific contacts in the country.» (higher scientific employee, 47)

«Everything we believed in, has been destroyed. The president and the government don't need science. Knowledge as a value and scientific activity have been rejected by the population.» (higher female scientific employee, 42)

«The ethics of scientific relations are changing. The researcher has become withdrawn. Scientific exchanges have worsened, the relations are caused by commercial necessities.» (higher scientific employee, 45)

«Everything has changed: the income is no longer sufficient to maintain the family, the defective equipment, or its awful quality, if it exists at all, the general atmosphere within the collective as well as outside. Nobody works with enthusiasm and new incentives aren't working yet.» (higher scientific employee, 43)

«I would never give up my work, despite the ridiculous income and despite the decaying prestige of science.» (scientific employee, 24)

Working and living conditions abroad

«I'd like to work abroad, because the material aspect is important. But it would be a scientific employment.» (leading female engineer, 26)

«Departure would only be a short term solution. For me it is more important to continue my work here than to travel abroad.» (higher scientific employee, 33)

«A work stay in the West is only possible for a certain period. The best would be half a year. I know that it is impossible to find a job abroad by yourself. If I leave, I will only go with an invitation or a contract. At present, I'm not planning to do this. That would be a solution if things go worse» (higher scientific employee, 42)

«The desire to work abroad exists, but it is a rather abstract desire. You should first try to find some other possible solution here. Secondly, there are totally different approaches in Western science, they won't need me.» (higher scientific employee, 44)

«Human relations there are really pleasant. I didn't realize any psychological barriers or stress. Maybe I've got a talent for languages, but after one month I had perfected my English and I spoke French nearly fluently.» (scientific employee, 37)

«I consider myself to be somebody for whom life in the West is quite strange. Despite my communicative abilities, it would be difficult for me to acclimatize myself there psychologically. The relations there are totally different in many respects. Well, they were really nice and hospitable to us, but here is an inner coldness and alienation. And then, the education and the culture have totally different bases.» (higher scientific employee, 36)

«I'm very often abroad. These trips help me a lot, of course. But it never occurred to me to stay there permanently. The psychological climate and the conditions are too strange. Here, I feel that I'm needed and that I'm one of us.» (laboratory leader, 50)

«There is a psychological orientation towards the West. Those who return from a work stay abroad try everything to

get another invitation or professional trip. That's why they make their scientific applications so energetically. Often, these applications are humiliating. The working and living conditions there employment bad, of course. But concerning the psychological atmosphere, it is, as opposed to ours, entirely formalized and you have problems adjusting. The micro-climate here is considerably better.» (laboratory leader, 58)

«The way of life in the West is quite an obstacle to emigration. Most of their life is regularized and determined by rationality. In scientific seminars a lecture takes 45 minutes, afterwards there are two or three questions and then all the participants run in different directions. That's the traditional pattern of scientific exchange. Formal relations rule over society and over academic circles, Russians detest such relations.» (head of department, 58)

«There are reasons why the founding of scientific schools isn't possible in the West. I suppose in particular our morals, Christian and communist, have brought about these hothouse conditions here which are necessary to found scientific schools» (higher scientific employee, 47)

«Concerning science; the level in the West is somewhat lower. There are no fundamental scientific schools. German scientists for instance are so interested to talk to us because they can learn a lot from us. (...) Working conditions there are of course marvellous, but nevertheless, the scientists there lost more than they gain » (higher scientific employee, 44)

«We have outstanding work conditions, better than anywhere else. We don't even realize how rich we are. But now we are forced to travel abroad for a certain period to acquire better material conditions for our work.» (scientific employee, 31)

«All these foreign invitations shouldn't be considered as invitations. In the West, Soviet and Russian scientists are regarded as a cheap labour force.» (higher scientific employee, 28)

«East or West, home is best» (higher scientific employee, 35)

References:

²⁹ The interviewers were all sociologists who also participated in the elaboration and completion of the inquiry.

³⁰ The identity of the respondents were known only to the interviewers. This was necessary to preserve confidentiality.

³¹ Not only the personal situation was of interest, but also estimations of the respondents as to whether his situation was typical or whether he knew something about the others situation. Here, to be an expert means to discuss and to argue, not only to question.

³² The professionally conditioned vigilance and mistrust should be reduced to enable a frank conversation to take place. It was not the point to lower the defenses of the interviewees in order to then ask questions about internal affairs.

³³ There, the logic of the course of conversation was important. It should not be questioned directly to avoid a hastily given direction to the conversation, the respondent himself should touch on the topics.

³⁴ This status is given due to a post-doctoral thesis. The Ph. D. corresponds to the Russian «candidate».

³⁵ «U Christa za pazuchoj».

³⁶ This signature meant that these holders of confidentiality had to observe certain restrictions in regard to contacts and conduct. It was impossible to travel abroad.

³⁷ Convertible currency.