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Ruling Rivers:
Discussions on the River Diversion Project in the Soviet Union

And thus, they declared to the river:
War,
War,
War!{1}

Samuil Marshak

What will they leave behind, the great “projects of the century”, those unrealised plans that proposed the “re-making of nature” on a grand scale? In the past, they were recorded as discussions, as history of negotiations, like a physical field of judgement and of a multitude of conflicting points of view, each with a different position, plan and sketch, with vast polemics in the mass-media. In the case of projects that proposed a fundamental reformation of the natural environment, an analysis of the history of ideas and the discourse surrounding the project can help us understand the modern relationship towards nature, which is characteristic to a certain culture. In the current article, the selected project is the so-called “project of turning rivers”, which is one example of a long and painstaking development of these utopian projects. This idea did not, in fact, succeed in practise, but nevertheless, the scale of its planning is stunning: a whole system of project-institutes was set up and all the practical steps of the plan’s completion were worked out in full.
Thus, what was the project of turning the Siberian and other northern rivers southward all about? The official name of the programme was: “The project of transferring part of the drainage of the rivers in northern Europe and Siberia into the southern regions of the country”. There was a plan to partly “transfer” a few rivers from the north of European Russia, as well as some rivers from Siberia. The idea as regards the rivers of northwestern Russia was created in the beginning of the 1930s within the framework of a programme aimed at the massive harnessing of resources of the Volga-basin. The suggestion to transfer Siberian rivers was made as early as 1877 by the engineer Demchenko (1842–1912), but it was included in the development of the Soviet project in the 1950s. According to the documents, these projects were meant to take place between the 1980s–2010s, but they in fact remained on the drawing board, despite the fact that preparations for it were started more than once. The projects, which cost almost ten billion dollars, were developed between the 1950s–1980s through the combined efforts of over 170 organisations and scientific institutes of the USSR and as a result all the necessary documentation were ready by 1975. However, in accordance with the conclusions of a series of examinations, the project’s realisation was postponed. In the end, in 1986, they were rejected completely and all the preparations ceased.

In the given article, we analyse the practical steps in the development of the utopian projects of the USSR, as exemplified by the project of “turning rivers”. Furthermore, we address the field of discussions, surrounding the projects that proposed a significant reformation of the natural environment. In other words, how and why did they “improve” the environment? We are interested in the new conceptual framework, on the basis of which they - in the Soviet society - planned to correct nature’s mistakes. Against the background of massive empirical documents, we discuss the following questions: how did the idea of the project become possible in the concrete, social context, in what way did they think it was to be completed, what were the main groups that were drawn into the discussion of the project and how did the idea and its features change with time? The methodological basis of this investigation is discourse analysis. The empirical foundation consists of the archive of publications in the central press and scientific journals compiled by the author in 2002 (approximately 500 texts). Previously, we made public the basic discourse fields, in which we proceeded to compile information (through the method of cross-reference, in the main periods of activity of publication: 1961–1987 and 2002–2003). For the reconstruction of the technical part of the project, we analysed 26 monographs and collections of articles, in which various details of the projects are discussed (1961–1990). As sources of additional information in the outlining of the chronology of events, we used pilot interviews (N=3) and published memoirs of project members (N=5). Western authors described the project of turning rivers in their investigations mainly in the 1970s–1980s.

Aquatic-Utopias in the USSR and the Rest of the World (1959–1970)

Before we move on to the immediate analysis of the project of turning rivers in the USSR, let us take a short survey of ideas that were formulated in a rather short period in the Soviet Union (and other countries) and that were directed towards controlling large water masses and natural processes and also towards the reformation of the natural environment according to human needs. Such a survey is necessary in order to show the context of development of the Soviet river project, which was unravelling at a time when man’s power over nature seemed all but unlimited and science was the key to all problems.

In the 1950s, the Soviet scientist Krylov proposed to de-salt the Baltic Sea by means of dams that would block the Danish straits. Over 20 million cubic meters of concrete would have been needed for this project. Another one of his ideas was the turning of the northern seas into a part of the mainland by covering the ice with silt to prevent it from melting in the spring. A series of projects was directed at the changing of the climate in the northern regions of the USSR. For example, the Soviet engineer Borisov suggested that the ice cap be removed from the land surrounding the north pole. He recommended that a dam be built over the Bering straits that would pump out water from the Arctic Ocean into the Pacific at the speed of 500 cubic kilometres a day. Then the warm currents of the Gulf Stream will melt the ice from the Arctic waters and warm up the climate in northern Eurasia. Another Soviet scientist, Shumlin, proposed just the opposite: to transfer water with gigantic pumps from the Pacific into the Arctic Ocean, thus raising the temperature of these waters and make the climate of Siberia and the Far-East similar to that in the Crimean.
A group of projects was directed towards changing the functioning of various seas and rivers. In the 1960–70s, projects were discussed concerning the hydroelectric station in Katun and the “Siberian Sea” and also some new stations in the lower parts of Siberian rivers. There were talks of complete desalination of the Baltic Sea and the Onega Bay, of transferring the waters of Danube into the Dnepr. The Institute of Hydro-Projects developed a plan of complete regulation of the flow of the river Enisey by means of twelve consecutive dams. Many of the projects suggested raising the water-level in the Caspian and Aral Sea: in the former, water was to be pumped from the Black Sea into the Caspian and in the latter, from the Volga river into the Aral Sea. Furthermore, the Caspian Sea was to be split into two parts – northern and southern – by building dams.

Other countries also designed (and in some cases completed) grandiose projects of modifying the natural environment. There were major river projects, for example, in China, India, Africa and the USA. During the second half of the 20th century, different plans concerning the re-division of water-resources were considered in China (e.g. transferring a part of the flow, approximately 30 cubic kilometres per year, from the southern rivers into the northern regions of the country that are prone to drought), and in India (e.g. transferring waters from the Ganges and its tributaries into dry areas). The North American hydro-energy alliance developed a project concerning a transcontinental waterway from Alaska into the dry western regions of the USA, all the way to northern Mexico, in order to irrigate fields and to harness the energy potential of the flow. The man-made river, with dams, water-reservoirs, hydroelectric stations and tunnels, was designed to transfer 110–150 cubic kilometres of water per year into the dry regions of America’s Midwest. In addition to these two projects, another one was planned which included the pumping of 21 cubic kilometres of water from the lower Mississippi area into the valley of the Rio Grande and New Mexico. The American project was first proposed in the mid-60s and the time for its completion was set at thirty years, with cost estimates running between 80–100 billion dollars. In the end of the 1970s, the project was dropped.

The aforementioned examples illustrate the following thesis: At certain stage in the development of a society, in different cultural contexts, conditions appear that support the formulation of various utopian projects. It is clear that the socialist USSR is one of the most vivid examples of this. In the following sections, we will analyse in detail the history of development and discussion of the project of turning rivers. The long-standing debates available on this topic provide a vast field of possibilities to reconstruct the relationship towards the natural environment that was typical of this specific society.

Change in the Ways of River-Use: From Pathways to Complex Control-Systems

The fundamentals of the project of turning rivers lie in the appearance of ideas about a possibility of a global redistribution of great water masses, by means of conjoining rivers belonging to separate systems into a single river-network. The changing of the flow of rivers that was “given by nature” and turning it into a complex, human-controlled system, according to the plans of engineers, would allow people to overcome the natural division of rivers in the north and the south. This again would compensate for the lack of sufficient water supplies in the southern regions of the USSR, as water could be “pumped” in from the northern rivers.

How was it possible that people began to look at rivers as complex, controllable systems? Let us take a look at the gradual movement towards this view in the Russian case.

Since ancient times, rivers were used as 1) roads, 2) energy-resources, 3) food-resources, 4) freshwater-resources (for irrigation, agricultural and industrial needs). When societies stood on the brink of the industrial revolution, we can observe a tendency towards a more complete and complex use of rivers. Thus, the idea appears of a necessity to systematically regulate water masses, and the redistribution of water flow becomes a possibility.

Starting from the end of the 17th century, the first geo- and topographical studies in Russia are conducted with the aim of creating new waterways for transport. The practical science of controlling rivers by channelling starts developing (mostly through the Dutch model) and the relevant technology begins to grow. The use of rivers as roads, as natural waterways for transport, was the first goal behind the idea of conjoining rivers. For northern and southern river-basins of European Russia, the first projects of this type were realised in the end of the 17th and beginning of the 18th century. Relatively short canals connected rivers of different
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to use water from northern rivers in connection with the reconstruction of Volga. There were suggestions to replace the permanent water-reserves from Pechera at the expense of rivers of north-western USSR. In the end of the 1930s, the project of Kama-Vychegda-Pechera water complex (KVPK) was formulated. Within the framework of the complex use of the Volga-Kama-basin that was taking place in the beginning of the 1930s, an idea was born to direct northern rivers – Pechera, Vychegda, North-Dvina and Onega – into new transport connections. Thus, the project KVPK foresaw the redirecting of the currents from northern rivers into the southern regions of European Russia, first as an attempt to develop water-transport (improving shipping industry) and to distribute the harnessed hydroelectric energy in order to boost the Ural industries, but then later in connection with trying to fight the water deficit. During World War II, these works were stopped.

In the 1930s, from another perspective, this theme arose in connection with the fall of water-level in the Caspian Sea. In a special meeting in November 1933, the Soviet Academy of Sciences, it was decided that, taking into account the foreseeable rise of the Volga-basin waterworks, they should warn of the possibility of a critical drop in the level of the Caspian sea. The suggestion was made to compensate for the reduced water content of the Caspian-basin with the help of "aided flow" to the Volga from neighbouring river-systems, including rivers that flowed into the Arctic ocean, Onega, Sukhona, Vychegda and Pechera. During the post-war years the task was set of "connecting all seas of European USSR into a single water-transport system". Between 1950–55, on the basis of contemporary materials from different studies, projects and other investigations, Gidroproekt developed "a technical scheme of redirecting the flow of the northern rivers Pechera and Vychegda into the Kama- and Volga-basins via gravity intake up to 60–70 km³ of water per year". This project begun in the years between 1937–40.

The grounds offered to substantiate this project included the profits from the added flow into the Volga basin and the prospects of development for the various branches of the national economy in European USSR. They blended together interests of electrification, development of irrigated cropping, fishing industry, forestry and shipping industries and the regulation of the water-level in the Caspian Sea. The primary reason for the necessity of this re-distribution was said to the need to rise the water-level of the Caspian and increasing the flow of the Volga in order
to irrigate those regions surrounding it. Among the other profits from the project was included a total of 11 billion kilowatts of electricity gathered from hydroelectric plants already-working and to-be-built on the Volga and Kama. The conditions of sanitation in the Kama and Volga would also improve, as would the hydrological regime in the flood-lands of Volga-Akhtluibinskaia and in the Volga delta. Furthermore, water would be directed towards supporting the industries in the cities situated on the Volga. The new transport-route would allow the movement of “natural resources of the north – coal, lumber etc.” (a turnover of goods around 9 million tonnes per year was planned). Thanks to the new transport-routes, the forests around the basins of the Pechora and Vychegda would become accessible to timber cutting.

Thus, the idea that a water-shortage in one area of the country can be covered by “pumping” a part of the flow from other regions was made flesh within the framework of the projects of re-distribution of water-resources from northern regions of Russia into the south. Such developments were proposed at different times with the aim of solving the country’s problems as regards food-supply, transport and energy and they all leaned on the need to create a single network of water-management. The idea of a multi-levelled river-management in the USSR was, broadly speaking, formed towards the end of the 1930s, after which the system changed and evolved. Between 1950–1960 detailed schemes of re-distribution were developed and they received the unofficial name “project of turning rivers”, which we will now discuss in detail.

The History of the Project of Turning Rivers in the USSR

A new turn in the discussion surrounding the idea of re-distribution started in 1961, when the so-called “project of turning rivers” was included in the programmes of the Central Committee of the Communist Party of the Soviet Union. This idea was taken up at the 21st meeting of the Committee (12th of January 1961). In the project of the third programme of the Communist Party (1961, “programme of building communism in the USSR”, draft for the 22nd meeting of the party), it was noted that “a Soviet person can accomplish some daring plans, concerning the change of flow in certain northern rivers and their management with the aim of harnessing the vast water-resources for the irrigation of dry regions.”

Also in the beginning of the 1960s, the ideas of a single deep-water system (EGS) and a single energy-supply system were actively evolving. According to the plans of constructing a single energy-supply system, a redistribution was proposed of the flow of fuel and energy between western and eastern Siberia, Central Asia and European Russia, in order to eliminate the gap between the location and production of energy resources. Especially strong was the development of irrigation and drainage construction, as well as water-management, in the years 1960–1970. During those years politicians order their ministries and departments to work out the project of turning rivers, the start of which was targeted to be in 1985. The enormous amount of plans reflects the number of scientific institutions that took part in the project – over 170 organisations and cooperatives from different ministries and departments engaged in the works. Among them were the Academy of Sciences of the USSR, Gosplan and various ministries, e.g. of water-management, energy, fishing industry, geology, higher education, health etc.

In order to give a fuller account of the project of turning rivers, we will take a look at its technical information, as it was designed in the 1950s–60s. According to data from Surukhanov of the Institute Gidroproekt, a project was developed of pumping 40 km$^3$ of water a year from the northern rivers Pechora (1/4 of its flow) and Vychegda (1/7 of its flow) to the south, into the river Volga. This would amount to 1/6 of its yearly flow. The project contained the organisation of three water-reservoirs with an equal water-level: Pechora, Vychegda and Verkhneamskii. Together these three would hold a volume of water “four times larger than the biggest manmade water-reservoir in the world, the Kubyshev reservoir.” Two dams were planned in order to make this happen. One in the river Pechora (12 km long, which would raise the water-level in it by 70 metres. Its construction demanded 110 million m$^3$ of earth) and one in Vychegda (its length about 2 km and height almost 35 metres, plus a hydroelectric plant). The resulting territory of these reservoirs, with their total area of about 13,000 km$^2$ and volume of over 220 billion m$^3$ of water, would then be joined with each other by a 82 km canal through the Pechora-Vychegda divide, as well as by another 100 km canal from the river Kama. The canals were planned as being 35 metres deep, which demanded digging over 520 million m$^3$ of earth. A third water-reservoir would be formed by blocking the river Kama with
another dam in a place where it forms a 5 km wide valley just above the city Solikamsk. In this given dam, Verkhnekinskii, they would build a hydroelectric plant and a lock (the drop in height would be 17 metres). From here the water would then flow south, into the Volga. It is indicated that these reservoirs "situated as they are in a forested, marshy, scarcely-populated areas, despite their considerable size, will not disturb the life of these places". Of the fields in the Republic of Komi and the Perm' region, 0.6% would be flooded and 0.3% of the industries of the region would be moved from the flooded zone. Due to the fact that the planned construction needed a great amount of digging land (over 680 million m³), which is "almost four times the amount of earth that was dug while the Volga hydroelectric plant, named after Lenin, was being built", the article attracts attention to the new technology which will be developed "in the next years by the Soviet industry". These are hydraulic machines for digging earth, new high-powered hydraulics for the deposition of earth dams and floating lumber-cutting machines which will cut wood under water and process it on the deck.

Consensus on the project was not easily reached. Many comments were made both by scientific organisations and by the expert committee of Gosplan. The amount of paperwork from different state institutions reached almost fifty volumes. By 1984 the deadlines for the project were moved to the year 2000. In 1986 by a decree of the Central Committee and the Soviet of Ministers the works were ceased. The reason was the need "of further investigation of the ecological and economical aspects of the problems concerning the re-distribution of a part of the flow from northern and Siberian rivers, which large parts of the community are demanding, and to concentrate financial and material resources needed for the completion of works aimed at increasing effectiveness in the use of water-resources and available illoriated land". However, an order soon followed to continue the study of scientific problems "related to the regional re-distribution of water-resources, on the basis of investigations of in-depth experiences of these projects from both domestic and foreign sources". Investigations continued to be conducted and the interest to this project remained high. In 2002 the suggestion to realise the project of turning Siberian rivers was taken up again by the Mayor of Moscow, Iuri Luzhkov.

The official decision about dismissing the project of turning rivers came in 1986, but it is necessary to note that throughout the time when it was discussed preparations were already underway and parts of the project were being completed. The first action took place already in the 1930s, when organizations began the construction of southern branches: the canals of Rostov-Krasnodar (for transferring water from the Don into Kuban), Volga-Don and Volga-Chograi. The completed Great Stavropol' canal led water from Kuban into the basins of Don and Chograi. In the end of the 1930s, according to the decisions made by the government, the construction of a water-reservoir in the Upper Volga began. But the war stopped this work. During the post-war years the realization of a part of the project was started. One of the developers points out that "the re-directing of flow into the Volga basin was, in practice, started in 1947, after a part of the flow from the river Msta, in connection with the rearrangement of the "Zavodskii" reservoir of the abandoned Vyshnevoldskii system, started to be pumped through the river Tvertsa into the Volga, amounting to about 1 km³ of water per year".

Between 1958–1962 the renewed idea about the project was accepted in parts. At that time in the Urals and Volga regions a network of canals was being built. These works were ceased in 1962 "due to the quick increase in expenses and protests of many specialists, including foreign ones, and local authorities". The next stage in the project's development happened in the 1970s. In order to cut a 65 km canal into the basins of Pechora and Kama, it was suggested that about 250 nuclear detonations should be set off. The first detonation ("Taiga") took place on the 23rd of March 1971, but its results were unsatisfactory – instead of the planned canal, the blast created a pond that was filled with radioactive water. In 1976 they planned to set off another blast – three nuclear explosions of 40 kilotons. The necessary cleavages were dug in the earth, but the blast was cancelled, because of the likelihood that the radioactive cloud will spread to a vast area. The works concerning the transfer of water from Siberia were started only after the 27th Party meeting had accepted the idea of transferring West-Siberian waters into the Aral basin and had ordered the government and Gosplan of USSR to make modernized preparations for the project. Almost 300 million rubles (at the rates of 1980) were reserved for the project and the work of preparing new riverbeds started. At this time another, expected "massive campaign of protests, including foreign scholars, tore the idea apart".

The extensive historical material presented above allows us to see the difficulties surrounding the discussions of the project and the political and
The Field of Discourse: The Parties Involved and Their Positions

The history of the birth and development of the project which we just looked at shows that the authoritative power of government, which in the 1930s easily conjured up and worked out grandiose projects that presupposed massive transformations of the natural environment, started since the 1960s to meet with active opposition and critique of such projects from various groups of citizens. We will now outline the field of discourse of the project of turning rivers and look at the positions of the main actors (the government, engineers, geographers, geologists, ecologically-minded scholars and writers) that took part in the discussions of the project. All the multifarious points of view are presented within the framework of three opinions – “for”, “against” and “abstain”: the defenders, the opposition and those holding a neutral position. The different groups are described along the following schema: 1) description of the group – their institutional background, how they were drawn into the process of discussion and what role did they play in it, what resources did they have, what was their logic in lobbying their position; 2) argumentation; 3) participation in various coalitions within the discourse – with whom they were in opposition, with whom they shared positions.

The Defenders: The Government and Engineers

The realization of the project of turning rivers was possible only inasmuch as it was part of some government program, with active participation by the state. In the jurisdiction of the government (in the USSR this was the Council Committee, the Soviet of Ministers and the administrative apparatus) Gosplan and others) was the division of the responsibility for design and realization of the project and the complex expertise of projects already prepared for completion. The planning of this project was undertaken by the Ministry of Water Management and Improvement. It was one of the biggest official structures in the USSR. It commanded about 200 scientific institutions and almost 20 million employees. The institutions of the ministry, being part of bureaucratic science, also made contracts on the conducting of scientific investigations with academic organizations. The developed project of turning rivers went through a series of expert studies of the Gosplan, which was necessary for such projects in Soviet times.

Despite agreeing in principle and generally supporting the project, the government’s position was nevertheless significantly more cautious and wary in comparison with the project’s official and engineers in the Ministry of Water Management who actively lobbied for a positive decision. The main reason for this caution of government officials was the need to take into account many positions, including those in opposition to the project.

The defenders of the project were not only the designers of bureaucratic science. Officials from the Academy of Sciences of the USSR (Gerasimov, Lvovich) spoke out in favor of the project, too. On the basis of an agreement of co-operation between one of the institutes of the Ministry of Water Management and the Institute of Geography, the latter made prognoses of the project’s effects on the natural environment. Scientific articles of geographers were published together with the designers of the project.

The Opposition: Scholars and Writers

The most notable opposition to the project came from three groups – geologists, ecologically-minded scholars and some writers.

Geologists. Between 1960–1980 there were surveys in the northern regions of European USSR and Western Siberia in order to look for new natural resources, mostly oil and gas. The discovery of these new territories containing resources was a matter of time. The information about the planned flooding of large territories in the north of the USSR was received strictly negatively in the geological institutions. The suggestions of the geologists ended, firstly, with the speedy completion of the survey of these
The Neutral Position

Between the groups for and against is an intermediate group that noted both positive and negative aspects of the project of turning rivers. Two major sub-groups can be found within this position—geographers and representatives of such government organizations, like Gosplan and the Committee on the allocation of productive forces. While the former subgroup consisted of scholars, i.e., geographers, mostly from the Institute of Geography of the Academy of Sciences, who gave a scientific evaluation of the consequences of the project of turning rivers, the latter group had to consider and develop long-term programs of developing the country. Both groups approached their analyses from various points of view, but one strategy is characteristic of them. They did not directly take a stand for or against the project, but noted the positive and negative effects of it. In light of this fact, their studies concentrated in discovering the negative effects and in developing means to neutralize these effects—in other words, to improve the project without major changes.

The science of geography (The Institute of Geography of the Academy of Sciences and other geographical organizations) was given the responsibility to predict the likely changes in the natural environment in the regions involved in the project. The Institute of Geography worked together with the Institute of Water-Management and those involved in the designing of the project. It conducted field research, as well as theoretical analyses. As a result, numerous conferences took place, monographs were published and collections of articles printed.

The new technical possibilities demanded a re-thinking of the scientific approach to the system Society—Economy—Nature. In the beginning of the 1960s, a new methodology is formulated in the geographical sciences of the USSR—"constructive geography". The ideology of the given approach (developed by the director of the Institute of Geography) gave the following goal to geography—to not simply "help mankind in the pioneering acquisition of new lands and their natural resources, as was the case for many years, but to be completely, scientifically at the service of the global development of mankind via a multi-faceted and ever intensifying use of the already discovered natural resources, via rational management of nature and an effective development of the economies of acquired territories". It was stated that the beginning of this new epoch in the mutual relationship between the society and the natural environment was
not to be one of "adaptation and natural-consumerism of nature and its resources", but a constructive and reformative one. The sphere where this constructive geography was to be applied was goal-directed reformations and management of the natural environment. With reference to the project of turning rivers "an important point of the geographical studies of the constructive style is the prognosis of the state of the environment and economy, but the prognosis is not passive, it is active, consisting of suggestions to improve the projects and defining the main directions and paths to re-organize the natural environment". This approach of constructive geography was the one that most met the demands set by the system of planning that was forming in the USSR. Science, while still maintaining potential critique, stood in a position where it recommended various approaches and tried to answer the government's demands. It is revealing that there were numerous joint-publications of geographers and engineers and representatives of other government organizations.

The fulfillment of the grandiose projects demanded huge resources from science – for the creation of the projects – and from the workforce – for the project's realization. What was the result of the combined development of projects by bureaucratic and academic science? We note that the Academy of Sciences first took part in the developing and analysis of the project in the 1930s and in the years 1950–80. The result was the growth of studies, fieldworks, theoretical investigations and analyses. New aspects of the problem appeared that also demanded studying. In the upshot, approaches were developed to evaluate the consequences of the projects, as well as alternatives to the project of turning rivers – water conservation, agricultural improvements. On the whole, the number of investigations concerning the environmental consequences grew and for this purpose various field-studies and theoretical evaluations took place. Academic science generated a great number of new projects and decisions. A discussion took place about the most feasible way of solving the problem (for example, variants for maintaining the water-level of the Caspian, different ways of melioration). There were also discussions between the various ministries – that of Geology and Water-Management. Their interests were in opposition. Various representatives of the society, mostly writers, engaged in the discussion. Their critique of the project started from a different position – not from scientific or economic concerns, but from the point of view of ethical values.

In the case we are studying here we have expounded a number of different groups that took part in the discussion of the project of turning rivers. Their positions partly overlapped and were partly in opposition to each other. We looked at various discourse coalitions that were defined on the basis of shared or differing opinions as regards their fundamental position to the aforementioned project. It now seems interesting to follow how the dominating discourse was transformed as time passed and how did the thoughts concerning the project change.

The Transformation of the Discourse Field Surrounding the Project

A characteristic feature of the project of turning rivers was the extended period of its discussion and development. As was shown above, the first serious preparations began already in the 1930s, whereas the final decision about turning the project down was made in 1986. Accordingly, the social, economical and political changes that took place in the country affected a lot in the approaches to the project at different times. For more than 50 years, there were transformations of the actual problems that the project was meant to remedy, as well as of the framework, with which the project's realization (or its abandonment) was justified.

The evolution of the discourse field was in many ways defined by the changes in the current problems of each period. Thus, in the years between 1930–70, the project of turning rivers was aimed at increasing water to the Caspian and discussed within the framework of a unified water-system. In the beginning of the 1980s, when the Caspian Sea's water-level began to rise, the re-distribution of water ceased to be a current issue. After the fall of the Soviet Union, the idea of pumping northern waters into the south was proposed in order to make profit, i.e. selling water to meet the needs of USSR's former Asian republics. Below is a summary of the main arguments in favor of the re-distribution of northern and Siberian waters.

Northern rivers: 1) the need to develop a unified water-system for the shipping industry and the transporting of natural resources (1930–1950); 2) the need to pump northern water into the Volga in order to raise the water-level of the Caspian Sea (1933–1974); 3) the need to pump water from the north in order to irrigate southern regions, where water melioration
is developed (Kazakhstan) (1950–2004); 4) the secondary effects of the project are also beneficial – as the network of canals passes through south-European USSR and the southern parts of the Urals, these areas will also receive more water to meet their needs; 5) it is possible to pump water from the north to sell it to the south (a commercial enterprise, bringing economic gains) (1995–2004).

Siberian rivers: 1) pumping water to irrigate Caucasian countries (1877–2004); 2) to pump water in order to raise the water-level of the Caspian Sea (1954–1974); 3) in order to dry out swampy parts of West-Siberia (1960–70s); 4) to create water-reservoirs in West-Siberia and harness energy from hydroelectric plants (1970s).

Main Frameworks of Argumentation

On the basis of the above analysis of the project's surrounding discourse field, we will now outline the main frameworks, within which the argumentation for or against the project took place:

1. Correcting nature's mistakes. It is necessary to re-design nature, because she is imperfect, for example: in the north – a surplus of water, in the south – drought. It follows that we must re-distribute these resources.

2. Developing hydro-technology. It is necessary to develop hydroelectricity, water meioration and water transport-systems (building new hydro-technological equipment). The given development must be orientated to the creation of a unified, complex system of water-management.

3. Saving natural environment (a reaction to worsening natural conditions). The conditions are worsening in the environment and we must improve them with the help of new projects (the level of the Caspian is falling, we must complete its restoration with the help of water re-distribution.)

4. Non-interfering with natural processes. We must not change nature, but just the opposite – we must reduce our influence on it to the minimum. Changing natural conditions is dangerous.

investigations must be conducted before any projects and prognoses made on their effects on the environment.

5. Economical use of resources. We should choose those alternatives that are most economical, as well as potential (for example – minor meioration instead of traditional water meioration; the uncovering and digging of natural resources, instead of their drowning under water).

Since the 1960s, competing schemes revolve in the discussions surrounding the project of turning rivers. They concerned the use of natural resources. As noted above, the opposition held the following alternatives: 1) concerning schemes of meioration: water meioration or land improvement (or minor irrigation); 2) the mining of natural resources or the building of hydroelectric plants and water-reservoirs; 3) preserving the cultural heritage of the northern regions of improving conditions and agriculture in the south. One of the characteristics is the idea of controlling nature with massive, complex systems, while the other one is keeping in tune with the environment, using new technologies, carefully studying the consequences and, in the case of risks, dropping the projects.

Conclusion

In this given article we looked at 1) the evolution of ways to manage rivers as a part of the mutual relationship between the society and nature; 2) the history of one idea of re-designing nature – the project of turning rivers; 3) the positions of the groups involved in the discussions about the given project and 4) the evolution of the discourse field surrounding a project entailing massive changing of the environment. Through the example of this project we analyzed the ruling ideology of the Soviet times that echoed the possibility and necessity of a major modification of natural processes to meet human needs. This concept was actively supported by the government, the scientific community and engineers and it was the dominating approach to the questions of water management. In this approach the correcting of one of nature's mistakes was seen feasible, i.e. re-distributing unfairly placed water resources. The dearth of water in the southern regions of the USSR was supposed to be compensated by creating
a complex system of river-management that would divert resources from the north to the south.

Nevertheless, during one stage of the discussions in the society (the authoritarian regime was weakened by the political "thaw" of the 1960s), there emerged some groups that were in opposition of the idea of turning rivers. The position of one of these groups was based on the costs of the project (the example of the geologists who could not allow the drowning of valuable resources and the writers who opposed the destruction of the cultural and architectural heritage of the north). Another group (from the Academy of Sciences of the USSR) were wholly against the idea of such a massive interfering in natural processes and they suggested another approach – the use of other techniques of melioration, underlining the alternative means of battling drought. Furthermore, the thesis of the impossibility of predicting the global effects of this project was presented as one of the main objections. It was felt that the northern regions would most definitely face serious climatic changes.

We can observe that during this period the problem of changing or reversing natural processes was already being discussed in the context of alternative views. This meant the uncertain consequences of the project (the alternative prognoses considered the possibility of climate cooling in the north, the chance of evaporation while water is transported through canals), as well as the necessity of choosing between the actual pros and cons of the project. It was a choice between mutually exclusive alternatives (developing the hydro-technological industry or the geological industry, improving the southern regions or the northern regions, supporting the current system of melioration or developing an alternative). While the discussion moved on, the opposition of different groups changed into the opposition of different ideas – the views on changing nature. Moreover, it led to the opening of the discourse field for other groups that were not engaged in the discussions before. If earlier (in the 1950s–60s) the discussion was fairly closed, between various departments that held the power to make decisions on this question, then later (in the 1980s), besides the hydro-technicians, geographers and geologists, the discussion involved writers and journalists, local inhabitants of the affected regions, the scientific community and others. In this occasion the discussion continued not just between groups with different interests, but concerned the choice between various alternatives – different methods of melioration were discussed, hydro-technology and geology were contrasted and compared and the question of allowing southern regions benefit at the expense of northern areas was raised. The scheme of the project which spurned from the idea of complex river management was met with opposing position. The difficulties in evaluating the project, the risk of the scientists’ negative prognoses fulfilling, together with doubts regarding the economical issues of the project of turning rivers, led finally to the government’s decision to drop this given project.
Endnotes

1. From henceforth, all translations by Erkki Seppänen, unless otherwise indicated.
3. We looked at three basic discourse fields: 1) scientific discourse (scientific journals, conference materials), 2) "popular"—popular-science journals, socio-political and literary publications, as well as mass newspapers and 3) ideological grounding of the projects. The scientific discourse was taken from specialist journals, such as: Vestnik ANSSSR (geographical series), Vodnye resursy, Gidrotekhnikheskoe stroitel'stvo, Gidrotekhnika i melioratsiya. We also looked at the popular-science journal Priroda. The "popular" discourse was taken from mass newspaper and popular journals (Ogonek, Literaturnaya gazeta, 1960–2004). The projects' ideological grounding was looked at in the decrees of the Council of Ministers of the Central Committee of the Communist Party of Soviet Union, the public speeches of Khrushchev (in which he mentioned the transferring of the northern rivers southward)—in the newspapers Pravda and Ekonomicheskaya gazeta (1961–1976). The inclusion of the project of turning rivers in the list of future projects soon to be realised created an outburst of opinions on it in the press (and in the editorials of scientific journals).
8. Admiral Ribas suggested connecting the rivers Pecher and Kama with canals first in 1789 and then again in 1836. General-major Parenichnov developed a plan for a canal between the rivers Volosensitsa and Votulka. In the years 1786–1822, the North-Ekaterinskiiskii canal was built, stretching out 18,3 km and connecting the flow of the river Vychegda—North Keltma with the river South Keltma in Kama. This canal was used until 1837 and it provided bread from the Volga regions. The North-Dvinskiisk canal, which was rebuilt many times and continues to function today, was built in the beginning of the 19th century and it connected the river Sukhona with the Volga (river Shkensnaia). (See: Motorina 1957, 39; Surukhanov 1961, 61; Shishkin 1961, 86.)
9. In agreement with materials of the "Cross-industrial commission for the compilation of a plan of actions for the development and improvement of water-routes of the Empire", see: Beliakov 2002.
10. Various projects of connecting rivers were proposed with the aim to cross over waterways for transport from the European areas into Siberia. The suggestions were based on materials gathered in a series of expeditions between 1890–1914 (Motorina 1957, 39). Thus, the scholar Rusanov suggested connecting north and southern Pechera with a channel, "then two great river-systems, the northern and southern Pechera and the Volga, will yield their powers for the good of our Fatherland's industrial and cultural development" (Rusanov 1945, quoted in Shishkin 1961, 86). The engineer Popov in the 10th meeting of Russian waterway-specialists argued for the need to connect Pechera and Kama in his presentation about the needs of the Kama shipping-industry (Motorina 1957, 39). The first project was supposed to export wood from the Pechera basin into the industrial regions of the country, whilst the second was meant to be built as a Kama-Pechera route in the general framework for developing connections in the transport system of main shipping routes of European Russia. In the years 1909–1917, plans were made to connect the river Pechera to the river Bereozovka, which flows into the Kama-river; also a plan to connect Vyrygda with Kama via North-Keltma, North-Ekaterinskiiskii canal and South-Keltma (Surukhanov 1961, 53). Until the revolution of 1917 the Ministry of Communications developed a plan to build a waterway for supplying coal from the Kuznets basin (Kuzbas) into European Russia by 1930 (the connection of Volga-Sibi or of Kama-Irtysk). Towards 1924 the proposition was made to build locks into the river Tom and transport the Kuznets coal via Ob', Irtysk, and then via Tobol, Iset' up to Ekaterinburg (Beliakov 2002).
11. For example, the following plans were included in the second five-year plan: connecting the river Tom, "the Ural-Kuzbas waterway" and "the Trans-Uralian complex" (Beliakov 2002).
13. After the death of Stalin in 1953, this work ceased. Moreover, in 1953, other "projects of the century" were withdrawn: the main channel of Turkmenistan (length 1100 km), the gravity canal Volga-Ural, the Volga-Pacific waterway, the waterworks facility on the lower Don, the Ust-Donetsk harbour, the Komsomol'sk-Pobedino thoroughfare—over 20 major transport and hydro-electric projects. See: Shmol' 1997.
15. The project of the Kama-Pechera waterway was planned in the 1920s by a department of the National Water Commission, Ukamprer—short for "Upravlenie izyskanii i proektirovaniia kamo-Pecherskogo puti" (Vendrov 1984, 7). On the Pechera and river Kolva, the project of connecting the rivers Kama and Pechera Kama-Pechera water-reservoir (Shishkin 1961, 87).
of some of these projects, developed by Gidroproyekt's Leningrad office and the Leningrad-section of the Institute Gidroenergoiproekt (Lengidipe), was presented by Dmitriev in a conference that addressed the problem of Caspian Sea's water-level (Asstakhov, 3rd-8th of September 1956) and published in a collection of theses from papers of 1959 (See: Dmitriev 1959). One should note that by that time others schemes of water re-distribution in the northern rivers had been made. In one of these projects, a volume of 150 km$^3$ of water per year was supposed to be transferred (Surukhanov 1961, 53). Other routes of transport from the northern rivers were proposed, for example, through "the Moscow Sea" into the Volga; through the rivers Oka and Volonezh into Don then via North-Donet and Sokol into the Don (Surukhanov 1961, 53).

25 Quoted in Velichestvennaia... 1961, 9, 6.
27 The construction of the Karakumskii canal, the North-Crimean canal and many other massive waterways, the draining of the Poles'e marshes, the creation of water-pipes in Kazakhstan, the irrigation of field in Central Asia, the Caucasus and the south of Russian and the Ukraine (Razumov, 8: "The echoes from the construction-sites of communism"). Gigantic hydroelectric plants were built in Angarsk and Bratsk, as well as few enormous water-reservoirs.

28 The main developer of the project of turning rivers was the institute "Sozuzgiproprovodhod" (short for "Vsesoiuznyi gosudarstvennyi proektno-izyaskatel'skiy nauchno-isledovatel'skiy institut"). It was founded between 1958-59 on the basis of its predecessor, "Gidroprovodhod", and confirmed as the leading institute in charge of water-management projects. In 1978 two functions were given to the Sozuzgiproprovodhod: that of the general designer in the development of the system of transferring part of the flow from northern and Siberian rivers into the south; and that of the leading organisation as regards as special hydro-technical works within the Ministry of Water-management. In the same year the name of the institution was changed to "The Leading Institute of Projects, Surveys and Scientific Research of the Transferring and Re-distribution of Waters from the Northern and Siberian Rivers – Sozuzgiproprovodhod". The development of the first part of the project of transferring water into the Volga basin was completed by 1979. In 1985 the first steps of the Siberia-Central Asia canal were planned (with a flow of 1150 m$^3$/s, length of 2590 km and area of irrigation 4.5 million hectares). (http://sovintervod.newmail.ru)
29 The development of the projects of water transfer were included in the "General directions of developing the national economy of the USSR between 1976-80" and confirmed by the decision of the 25th meeting of the Communist Party: "to conduct scientific research and, on this basis, implement projects related to the problem of transferring part of the flow from northern and Siberian rivers into Central Asia, Kazakhstan and the Volga basin". On the 24th of July 1970, a decree No. 62 was given by the Central Committee of the Communist Party and the Soviet
of Ministers, regarding "Perspectives of developing the drainage system of regions, controlling and re-distributing the flow of rivers in 1971-1985". In it was declared the primary necessity of transferring 25 cubic kilometres of water per year by 1985.

In the decisions made in the 26th meeting of the Central Committee, the following order was made: "to embark upon preparations to the transfer of a part of the flow from northern rivers into the Volga basin, and to continue the scientific works and engineering-projects concerning the transfer of water from Siberian rivers into Central Asia and Kazakhstan". On the 23th of October 1984 a plenum of the Central Committee was held on the question of "a long-term programme of land improvement up to the year 2000", in which they stated that "by 2000 we plan to bring up the area of irrigated land up to 30–32 million hectares and the area of drained land up to 19–21 million hectares. We also anticipate the completion of construction projects of the first stage of transferring a part of the flow of northern rivers and lakes into the Volga basin at around 5–8 cubic kilometres per year [...].

In the near future is the completion of design projects concerning the transfer of flow from Siberian rivers into the regions of the Ural and Western-Siberia, Central Asia and Kazakhstan". The 27th meeting of the Central Committee made note of the necessity of further concentration on the problems of regional re-distribution of water resources. See: Materials from the 27th meeting of the Communist Party of Soviet Union, 1986, 299.

30 Koronkevich and Timashev 2002, 6.
32 Surukhanov 1961, 57.
33 Surukhanov 1961, 57.
34 Surukhanov 1961.

From the conclusion of the hydroelectric commission of Gosplan of the USSR (1980) and the hydroelectric commission of the Russian Soviet Republic (1980), the project does not meet the criteria of successful completion of the food program; alternative ways of melioration have not been worked on; expenses are underestimated throughout the project, the cost of the first stage is reduced by half; the number of required workers for the construction is reduced to 1/3–1/4 of reality; the yield of agricultural products is exaggerated by 30–50%; strategic tendencies of water management are disregarded in the project; the project's first stage withdraws 40–50 billion rubles and yields a 2–2.5% increase in the agricultural production; an unjustified priority is given to water melioration at the expense of other methods and, furthermore, the melioration of a hectare of water costs 5,000–7,000 rubles, while that of forest costs 500–600 rubles; Sosuzgiprovodhiz (the main project organization that was created for the "project of the century" even before the availability of expert information etc.) did not present any alternatives to the project, e.g. in the form of other forms of melioration. (Lebedeva 2002).
Bibliography

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Conceptions of nature are part of Russian cultural self-understanding and national identity, and they also have ramifications for environmental politics and practices. In order to understand such cultural undercurrents, it is necessary to probe the historical and cultural meanings and values given to nature. In this volume different conceptions of and approaches to “nature” are characterized within national cultural systems of belief and knowledge. This culturally and historically oriented, multi- and interdisciplinary volume points out that there is no singular nature as such but that natures culturally constructed and maintained. Focusing on nature as a space transmitting natural elements and political symbols, the articles emphasize most important it is to understand these national markers of Russian identity. This book is based on papers given at the Helsinki Aleksanteri conference in November 2003.

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