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Generalized Representations of Siberia in Electronic Scientific Communications

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Abstract. This paper describes how we identified the images of a region and the regions' generalized representations based on these multiple images. To illustrate this, we attempted to identify the generalized representations of Siberia, one of the largest regions on the planet. We analyzed open Internet resources on scientific research on Siberia that can lay the foundation for positioning Siberia in the contemporary world. To identify the generalized representations of Siberia, we analyzed the multiple images of Siberia in electronic scientific communications in Russia and abroad. Using ScienceGate (SGP) and the Bielefeld Academic Search Engine (BASE) services, we studied the abstracts of papers published in the International Peer Reviewed Journals in 2013–2020 and 2020–2023. After that, we analyzed the set of images of Siberia we found in electronic scientific communications and identified the generalized representations of Siberia. This region was chosen for two reasons: Siberia 1) acts as an indicator to predict the consequences of such changes as climate change, global warming and others for the planet; and 2) can be interesting for researchers in different scientific areas. Defining the generalized representations of Siberia might further scientific prognosis as researchers will be able to better understand the potential of this region. The method we utilized may be applicable to identifying generalized representations of other regions and contribute to their comprehensive study from different perspectives, including interdisciplinary scientific research.

Key words: Siberia; generalized representations; image; scientific communications; global changes; interdisciplinary scientific research; climate change; global warming; COVID-19

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Обобщенные представления о Сибири в электронных научных коммуникациях

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Аннотация. В статье описываются результаты работы по выявлению образов региона и обобщенных представлений о регионе с опорой на эти различные образы. Для того чтобы это показать, была предпринята попытка выявления обобщенных представлений о Сибири – одном из крупнейших регионов планеты. Были проанализированы научные исследования о Сибири, размещенные на открытых интернет-ресурсах, которые могут стать основой для позиционирования Сибири в современном мире. Для выявления обобщенных представлений о Сибири проанализированы многочисленные образы Сибири в электронных научных коммуникациях в России и за рубежом. С помощью сервисов ScienceGate (SGP) и Bielefeld Academic Search Engine (BASE) изучены аннотации к статьям, опубликованным в международных рецензируемых научных журналах в период 2013–2020 гг. и 2020–2023 гг. После этого были проанализированы образы Сибири, найденные в электронных научных коммуникациях, и выявлены обобщенные представления о Сибири. Выбор данного региона обусловлен двумя причинами: Сибирь 1) выступает в качестве индикатора прогнозирования последствий для планеты таких изменений, как изменение климата, глобальное потепление и др.; и 2) привлекает внимание ученых из разных научных областей, интересующихся различными аспектами исследований данного региона. Выявленные обобщенные представления о Сибири могут способствовать дальнейшему научному прогнозированию, поскольку исследователи смогут лучше понять потенциал этого региона. Используемый метод может быть применен для выявления обобщенных представлений о других регионах и способствовать их изучению с разных позиций, в том числе с позиции междисциплинарных научных исследований.

Ключевые слова: Сибирь; обобщенные представления; образ; научные коммуникации; глобальные изменения; междисциплинарные научные исследования; изменение климата; глобальное потепление; COVID-19

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1 Introduction

The era of global changes (climate change, global warming, COVID-19 and others) and the new global crisis has brought extensive economic, political, cultural, and religious transformations of different regions throughout the world. Understanding how a region is perceived by domestic and international audiences, and identifying its generalized representations can help a region reveal its potential for researchers in different areas and minimize the negative effects of the global changes.

In addition, coronavirus as a starting point for a new global crisis has changed the order of things and the mankind had to face the lockdown causing the disintegration of the countries, regions and nations, when everyone defends their own interests. The lack of mobility causes the danger of losing mutual understanding between different nations and starting the confrontation with each other if people do not accept each other's world views, thought patterns, or cultural customs and traditions.

Before the coronavirus lockdown, the society had been characterized by high real and virtual mobility. The pandemic impeded the real mobility, but the pace of the virtual mobility has been accelerating. The Internet enables access to the images of different artifacts of regions from anywhere in the world, which is critical for researchers. We understand artifacts of regions both as natural objects and phenomena and those created by humans that exist within a certain region and are connected with the lifestyle of people living there. The artifacts exist in the real life, but electronic scientific communications contain the images of these artifacts. The combination of images, arranged by theme or some other principle, constitutes generalized representations. The generalized representations of a region are accumulated from the images and stereotypes that scientific researchers have in their minds, which reflect their perception of this region.

We consider that the best way to define the generalized representations of a region is through electronic scientific communications,

because they offer reliable and verified sources, which helps avoid prejudice and factoids. Our idea is that the generalized representations can be defined only through the integration of the inner and outer views of the images that constitute the generalized representations, because people from different cultures can be different in “defining repertoire of scientific images, patterns and modes of creative thoughts” (Banerjee, 2008). The inner view is the view of those people who live in the region. In our research, this view is identified through the publications by Russian scientists in the International Peer Reviewed Journals; and the outer view is shown through international scientific publications.

The generalized representations of a region reflect the meaning of this region for people, meaning that has been shaped for centuries as a result of human interaction with the environment. We assume that generalized representations are crucial not only for understanding and accepting the other cultures but also for interpreting the cultural values and the meaning of people's native cultures. Thus, we consider that understanding generalized representations of any region and presenting them to the world is important to every region as it can foster its successful development and unlock the region's potential for researchers in different fields of scientific knowledge.

Our research aims is to identify the images of one of the regions, Siberia, which constitute Siberia's generalized representations in the context of such global changes as climate change, global warming, the COVID-19 pandemic and others. We studied the multiple images that Siberia has in electronic scientific communications both in Russia and in the world and analyzed these images to understand the generalized representations of Siberia. We hope that might contribute to understanding what Siberia represents for interdisciplinary scientific research because the generalized representations can help reveal the region's different perspectives.

2 Why Siberia?

There is a growing interest in research on Siberia in the international scientific community. Researchers around the world investigate various aspects of this region. Siberian research centers exist around the world. The range of research topics is very diverse: from natural sciences regarding climate, landscape, biodiversity, ecology, and medicine, to the humanities on history, archeology, culture, languages, and ethnography, which proves that Siberia has significant potential as a subject

and object of interdisciplinary scientific research.

This attention of the scientific community to Siberia is explained by the “uniqueness of this region, which is largely determined by its geopolitical position between Europe and Asia and its closeness to China and Southeast Asia. At the beginning of the 20th century, “Siberia” was not considered an administrative term; there was another term, “Asian Russia” (Donskikh, 2017: 119), which was used when speaking about Siberia.



Fig. 1. The geographical position of Siberia reflected in English-language publications
Рис. 1. Географическое положение Сибири в отражении англоязычных изданий

In the Russian tradition, there are clear boundaries between Siberia, the North, and the Arctic regions. “Siberia is perceived as a region in North Asia located entirely within the Russian Federation, occupying the territory from the Urals (in the west) to the Pacific Ocean (in the east), and bordering the Arctic coast (in the north)” (Gorbacheva: 9) and Kazakhstan, Mongolia, and China (in the south).

Despite Siberia’s seeming remoteness, its substantial industrial, scientific, educational, and resource potential is recognized worldwide. Natural scientists study Siberia because of its high rate of natural and climatic changes.

The population of Siberia combines indigenous peoples and people who originally come from other parts of Russia and neighboring or distant countries. The majority of those who live in Siberia today are the descendants of people who came to Siberia as a result of the voluntary and involuntary resettlement policy of Russian governments, which began after the expedition of Yermak in the 16th century and then continued in Soviet Russia. The new settlers had different backgrounds, and ranged from dreamers and explorers to criminals, political prisoners, and national groups. Settlers lived alongside the indigenous peoples of Si-

beria: Yakuts, Buryats, Siberian Tatars, Tuvinians, Altaians, Khakasses, Nenets, Evenks, Shorians and others. Thus, the generalized representations of contemporary Siberia may be a combination of those many images belonging to different cultures of this multinational region.

In sum, different researchers are considering global and local issues connected with Siberia and answering numerous questions. Every year new opportunities and resources are revealed that could influence the future world order. In that context, studying the generalized representations of Siberia in electronic scientific communications might become a certain foresight.

3 Methodology

In this research, we are making an attempt to identify generalized representations of a region, which are a combination of multiple images that domestic and international audiences have about this region. We understand the concept of image in the postmodernist tradition supported by Deleuze (1986), who states that an image can be intangible at an individual level, but it becomes very powerful, and even able to change the mindset of people when combined with some other images. The idea of generalized representations follows from the Deleuze's theory of movement-image, but generalized representations described in this paper are about publication, as distinct from Deleuze's movement-image, which is about cinema (Deleuze, 1986).

Thus, to reveal the generalized representations of Siberia, we used the key word search (using the key word "Siberia") in different subject areas in ScienceGate (SGP) and Bielefeld Academic Search Engine (BASE) services (published in 2013 to 2020 and in 2020 to 2023), and the instruments of bibliometric visualization (Tag Cloud).

We divided the search of publications into two periods (2013 to 2020 and 2020 to 2023) in order to monitor changes in representations of Siberia in the new global crisis context, which was initiated by the coronavirus pandemic.

To obtain the most objective view, we studied the publications by Russian scientists in the International Peer Reviewed Journals, which gave us an inner view of Siberia, and supplemented them with publications by international researchers, which gave us an outside perception of this region.

First, we analyzed the titles, abstracts, and key words of scientific publications in various subject areas of abstract and citation databases from 2013 to 2020, and then from 2013 to 2023 using ScienceGate (SGP) and Bielefeld Academic Search Engine (BASE) services, and located the key images of Siberia. After that, we used systematic sampling and examined every tenth publication with the key word "Siberia" we found in these services. In the ScienceGate there were 9,695 papers with the key word "Siberia" from 2013 to 2020, and 4,728 publications from 2020 to 2023. In the Bielefeld Academic Search Engine there were 47,272 publications with the key word "Siberia" from 2013 to 2020, and 19,329 papers from 2020 to 2023.

We categorized these papers into the following groups: (1) environment and living conditions, (2) natural resources, (3) people's lifestyle, (4) infrastructure and communication, (5) business and management, and (6) technology and innovation. This categorization enabled us to identify subject areas containing images that constitute generalized representations of Siberia. These representations can be further used for the region's successful positioning.

If we focus on key words as indicators of the topics of Siberia studies and, accordingly, representations of Siberia, we can discern their change in the period from 2020 to 2023. Thus, the most frequent key words in the publications for the period from 2013 to 2020 were the following words: land surface (9.7); North America (9.39); Arctic Siberia (8.17); Biomass burning (8.09); Lena River (8.08); organic carbon (6.8); Northern Eurasia (6.5); Northern Siberia (6.16); Lake Baikal (5.87); Permafrost zone (5.71). Key words in publications from 2013 to 2020 are presented in *Figure 2*.

4 Generalized representations of Siberia found in the SGP and BASE

This section presents generalized representations based on our generalizations of the images we found in the ScienceGate (SGP) and Bielefeld Academic Search Engine (BASE); we also included the references to the resources that contain the most memorable and unique images of Siberia. We did not compare and contrast the images to obtain the generalized representations of Siberia but found the generalized representations of Siberia through the integration of images revealed in the scientific publications in each of the above-mentioned subject areas.

4.1 Environmental and living conditions

Siberia has special environmental and living conditions; this region is interesting for the researchers who investigate how people survive in this harsh natural environment that may be caused by negative environmental changes.

4.1.1 "A harsh land"

The generalized representations of Siberia cultivated by the natural sciences research are connected mostly with harsh weather conditions of Siberia. In many publications Siberia is described as hostile, not suitable for people environment. This image can be explained by the two factors: the severe climate and the geographical position of Siberia. This contributes to the image of Siberia as a harsh land and such associations as "cold desert", "sinister place", "frost", "gnat", and others supported by Belkina & Likhachev (2013), Domatsky et al. (2013), and other authors. Belash & Mitrofanova (2018), consider that builders "have to face many severe conditions of construction", because of the climatic conditions of Siberia. However, these associations with Siberia have not only negative connotations. According to Jirásek & Hanuš (2020), "this developing sport, recreation, and tourism should be classified as adventure tourism (mode of experiencing) and nature based tourism (traveling to natural environment)".

4.1.2 "Pre-historic past of the planet"

The climatic conditions of Siberia, the North and the Arctic contribute to preserving the ancient artefacts found during the excavations. These artefacts are uncovering the ancient history of the humanity, which brings the images of ancient people with such key words as "history" and "ancient". These images are supplemented by the research on Demography and Ethnology devoted to the lifestyle of the unique Siberian ethnic groups. In many publications (Stupakova et al., 2015; Maloletko, 2013; Gatinsky, 2016; and other authors) Siberia is associated with fossil of the pre-historic era of the Planet, with such key words as "Proterozoic", "Pleistocene", "Ambrian", "Paleozoic", "Ordovician", "Silurian", "Jurassic" and others. For instance, Seuru et al. (2014) present paleobiological and taphonomic analyses of the bone accumulations discovered during the excavations at the Krasnoyarskaya Kurya, situated in the southeastern part of western Siberia (Russia).

Many publications offer such images as mammoths, earthen walls, cold climate, steppe landscapes, petroglyphic art, direct and indirect percussion (piquetage), ivory artifacts, deer and elk figurines, and Siberian zoomorphs. There is some research about the early human settlement (Rudaya, 2013), vessels from middle Bronze AGE (Molodin et al., 2014), and even those covering the geometry of the rammed-earth walls (Alfimov et al., 2012). Skeletal growth between Early Neolithic (EN) (8000 to 6800 BP) and Late Neolithic (LN) is studied by Temple et al. (2014), Ponomareva (2016) studies the rock art of western and southern Siberia; she analyzes the palimpsests from Kamenny Ostrov on the Angara, and the evolution of the Angara style. Siberia has environmental and weather conditions able to preserve the evidence of the pre-historic past of the planet. Thus, we can suggest that Siberia will be the place to keep the natural and historical artefacts of our age for the future generations.

4.1.3 "Perennially frozen ground"

Siberia is a vast area, which influences the climatic and ecological changes on the Planet. Due to Siberia's climatic conditions,

many natural processes proceed slower than in warmer regions; some of them even remain unchanged for centuries. That is why this area is often called “paleoclimatic and paleogeochemical archives” (Tatsii et al., 2020), where the remains of the past are retained forever, and the changes of these remains can help prejudge the future.

Many images of Siberia in international papers, connected with the characteristics of Siberia’s territory, climate, flora and fauna, are mixed with the images of the Arctic. Siberia is often associated with permafrost, air temperature, and ice cover. Permafrost environments are referred to as “perennially frozen ground” and are supplemented with the image of ice wedges (Schennen & Tronicke, 2015), ice complex deposits and ice-rich formations (Schennen et al., 2016).

The specific research interest is focused on the global climate-regulating role of West-Siberian swamps. According to Pokrovsky (2020), in the South of West Siberia this role is positive: the swamps absorb from the atmosphere a huge mass of carbon that causes the greenhouse effect and turn it into peat deposits. This means that the swamps can cool the atmosphere. However, in case of perpetually-frozen ground the situation is completely different. As a result of swamps thawing, methanol leakage from permafrost occurs that leads to increasing the greenhouse effect and threatens the environment.

It is an interesting fact that this image and related concepts of Siberia are the most common in the studies of the international scientific community published between 2020 and 2023, due to the beginning of a new global crisis, the starting point of which was the coronavirus pandemic, which provoked and intensified the global economic, social, political and climatic crisis.

4.1.4. “Climate paradise” & “Climate dystopia space”

There are two diametrically opposed images of Siberia in domestic and foreign publications connected with climate crisis — Siberia as a “Climate paradise” and Siberia as a “Climate dystopia space”.

The image of Siberia as a “Climate Paradise” represents Siberia imaginary as a consequence of the climate crisis. In this context, global warming and the melting of permafrost will not lead to a global catastrophe, but, on the contrary, will contribute to the creation of comfortable living conditions in Siberia. This image is discussed by Parfenova, Tchebakova & Soja (2019), and other authors. According to their studies, “in a future warmer climate, food security, in terms of crop distribution and production capability, is predicted to become more favorable for people to support settlements” (Parfenova, Tchebakova & Soja, 2019: 12). In addition, melting permafrost will lead to increased migration, settlement of the cold Asian Russia and the development of new cities.

Although there is an optimistic image of Siberia's future as a “Climate paradise”, most researchers (e.g. Czerniawska & Chlachula, 2020; Gorbatenko, Volkova, Nosyreva, Zhuravlev & Kuzhevskaja, 2020; Kichigina, 2021; et al.) predict the negative consequences of Siberia connected with the climate crisis.

Negative consequences of the climate crisis include “ground thawing, which poses a danger to local settlements and causes serious environmental and engineering problems in central and northern Siberia” (Czerniawska & Chlachula, 2020: 509); frequent high severity fires, affecting compositional, structural changes in forests and causing peatlands to dry out (Gorbatenko, Volkova, Nosyreva, Zhuravlev & Kuzhevskaja, 2020; Feurdean, Diaconu, Butiseaca, Galka, Hutchinson, Kirpotin, Pfeiffer & Tonkov, 2021); the danger of flooding (Kichigina, 2021), etc. In this context, the authors create the image of Siberia as a “Climate dystopia space”.

4.2 Natural resources

Siberia is rich in mineral, water and forest resources, which makes this region interesting for the researchers. Searching for natural resources is necessary for maintaining “the quality of life for people in case of negative consequences of global changes when the humanity will have to search for their new deposits” (Gorbacheva, 2020: 31).

4.2.1 “Repository for resources and raw materials”

A very common image of Siberia is the image of a materials sector, or even the Russian resource colony; it has very large disposals of hydrocarbon feed, coal, uranium, ferrous, non-ferrous and precious metals (including diamonds), wood, water and water-power resources. That is why many publications are connected with different methods of assessment of these resources. For example, Skvortsov et al. (2019, pp. 217-229) suggest different methodological approaches to reveal net oil thickness when searching for prospective target for exploration. Siberia is also the territory of peat bogs, a very important element of biocoenosis. These images are discussed by Sergeeva & Khokhlova (2015), Nefedkin (2014), and other authors.

The perception of Siberia as a supplier of raw materials (furs, precious metals – silver and gold, agricultural products – grain and butter, and others) to Central Russia (and not only) has been shaped for a long time. Even nowadays, many researchers still consider Siberia a “resource colony” of Russia (Vereshchagin, 2013); many images are connected with extracting natural resources and have a clear-cut ecological aspect. This aspect is very popular because the geopolitical status of Russia depends to a large extent on extracting, transporting and processing mineral deposits, oil and gas. The resources of Siberian forests and fresh water storage of this region also influence the global ecology, including oxygen and carbon dioxide balance. This happens because one of the largest swamps of the Planet is situated in West Siberia. This swamp is examined by numerous scientists. For example, Savichev et al. (2018) states that studying the processes and conditions of geochemical anomaly in the environment is important for solving a wide range of scientific and engineering tasks, from exploration activities to waste management.

4.2.2 “Forest and water riches”

Siberia combines foraging, cattle (including deer) breeding and agriculture with modern industries (Sedov, 2016: 38-43). Chen

et al. (2018) study selective constraints in Siberian wild boars to evaluate “the genetic drift on shaping molecular evolution”. Many images of Siberia are connected with forests, taiga, Siberian pine, and Baikal. The issue of forestry in Siberia is mentioned both as wood supplies (Russia has the largest timber resources) and protective ecological functions, including maintaining balance in the atmosphere, with the key words “carbon”, “carbon dioxide”, “carbon isotope”, and “isotopes”. This group of images is added by coniferous forest, boreal forest, larch, coniferous tree, and deciduous forest, and other images connected with the natural and mineral resources of this region (the images of sediments, mineralization, zircon, basalt, peat, silicate minerals, diatoms, and quartz).

Researchers mention three great Siberian rivers: the Lena, the Yenisei, and the Ob; these water bodies are explored in connection with the role of Siberia as keeping biodiversity, thawing, climatology, warming, and climate modeling. These images appear in publications by Demidenko & Khizhnyak (2017), Filandysheva & Soroka (2013), Paromov et al. (2017), and other authors. For example, Tskhai (2020) developed an algorithm for the water bodies of the Upper Ob basin, used in assessment of ecological consequences under river regulation.

4.3 People’s lifestyle

Potential negative consequences of global changes can transform the lifestyle of people, for example, if they have to change their habitat. Siberia is a region that can be used for making scientific prognosis about different ways of the society development because this region is a place of co-existence of people from different cultures, religions and even époques, where people with conservative and traditional life style live alongside with the representatives of more progressive society, who had to resettle in Siberia in different time because of different reasons. Even the representatives of the native population of Siberia belong to different cultures with different ways of life. This makes Siberia a unique region to

research the possible models of social development that global changes can result in.

4.3.1 “*Siberian nomads*”

The unique anthropological characteristic of the image of Siberia is expressed through the image of the native population, bearers of ancient nomadic culture. The images of the Dolgans, Yakuts, Evenks, Khanty, Mansi, Nenets, Buryats, Itelmen, Koryaks, Nenets, Nanays, Tuvinians, and Evens are mentioned both in the Russian and international scientific communications. There are many publications connected with the languages of the indigenous peoples of Siberia. There are also such images as national settlements, Arctic peoples, circumpolar population and communities, indigenous minority, epic material, and many others that are connected with the indigenous peoples of Siberia. There are numerous publications (Vinokurova, 2015, Gogolev, 2014 et al.) about health-related problems of the indigenous peoples of Siberia, their hereditary diseases, genotype, and alcohol consumption. Many publications are connected with the traditional occupations of the native peoples (fishing, hunting, and deer breeding), folk arts and crafts (wood and bones carving), nomadic lifestyle, shamanism and hunter-gatherers.

4.3.2 “*Shamanic culture*”

Some researchers (e.g., Johansen, 2017; Toboev, 2017) investigate shamanic culture in Siberia including shaman’s mental status, shamanistic worldviews, shamanic remedies and curses, and techniques and rituals of the Siberian shamanism.

This topic is important for contemporary research, because it is connected with preserving the uniqueness of different regions, the identity of different peoples’ worldviews that often have the religious background. It shows that the idea of the other world to be found on the other side of the rock actually is a widespread motif of shamanic beliefs in Siberia, and that variants of this belief provide a new mode of insight into understanding the semantics of Siberian rock art (Rozwadowski, 2017).

4.3.3 “*Hunter-gatherers*”

The international papers mention Siberia as a land of nonhuman living conditions with

hunter-gatherers, who can make Siberian traps. The image of hunter-gatherers is very popular and presented in many publications (Timoshenko & Saveliev, 2013; Zakh, 2013; and other authors), as well as the image of reindeer herders. For example, some papers study hunter-gatherers’ interactions with animals.

The meaning of such research for the contemporary scientific discourse lies in a deeper understanding of the human-nature relationship. For example, Pasarić and Warren (2019) examine different contexts of hunter-gatherers’ treatment of animals: not only hunting but keeping as pets, captives or companions.

4.3.4 “*Siberian identity*”

The contemporary Siberian identity has been shaped under the influence of indigenous peoples that is similar to the nomadic identity in some ways; most of native peoples of Siberia had a nomadic lifestyle. Siberia is the area of centuries-long interaction of different peoples; this has produced the so-called Siberian identity. Vasilyeva (2014) and some other authors mention aid-giving behavior as one of the characteristic features of Siberian people while studying the voluntary associations of those exiled to Siberia.

Churkin (2018) considers that the process of travelling contributed to the development of different strategies of adaptive behavior that led or didn’t lead to successful adaptation. Remnev (2011) mentions that “Siberia was perceived as a certain “extension” for the European Russia from the East; Siberian people could not but feel that they lived far away from the rest of Russia” (Remnev, 2011: 113); this has led to appearing a new social group with the unique genotype metaphorically called the Siberian genome (Spicheva, 2017), a combination of common qualities that define the mentality and psychics of those people who live in Russian Siberia.

“The issue of the Siberian genome can be considered through finding the parallels with the processes of shaping the new identity of the digital nomads” (Spicheva, 2017: 211), because “the appearance of the Siberian genome

was conditioned not by inheriting certain anthropogenetic characteristics but by the resettlement policy of the authorities that resulted in creating this special set of social, psychological, ideological, moral, and cultural qualities” (Spicheva, 2017: 211). Digital nomads are people not attached to a certain place; they use the Internet technologies and mobile connection for their work, studies, or other activities (Makimoto & Manners, 1997). Although digital nomadism appeared in the 20th century, it can be considered an urgent social and cultural phenomenon, and one of the basic current trends in the digital network society (Kuzheleva–Sagan & Spicheva, 2020).

Thus, the history of development of the Siberian genome can redound to deeper understanding certain aspects of development of the network information and communication society, and “appearing the social groups of digital nomads, that do not also have any common genetic history” (Spicheva, 2017: 211). Spicheva (2017) justifies the hypothesis that “representatives of some social groups (for instance, the Siberian) have a certain predisposition to digital migration and nomadism” (Spicheva, 2017: 211), which is important for understanding migration processes and how they appeared as a result of different kinds of global changes.

4.3.5 “Colonial Siberia”

The lifestyle of Siberian people and their attitude to their life space are different from the settled lifestyle of the inhabitants of Central Russia. Researchers often show Siberian people as hermits. The image of “colonial Siberia” as a territory of outcasts has been built for many years. In the past, this region was often associated with exiles and hard labor camps, in the Soviet times with Stalin’s camps (the gulag), which were built on the territory of Siberia (Ananiev, 2019; Krayushkina, 2019).

4.3.6 “Stalinist system”

The publications connected with the history of Siberia contain some negative images, such as Siberian prisons and war victims. In Blazer’s paper (2015) there are the images of gulag, Stalinist system, camps and exiles, but he also mentions the issue of cultural revitalization. Such images appear in both Russian-

and English-language publications. These papers investigate such consequences of the Stalinist system as GULAG, political exiles, and ignoring interests of indigenous population. For instance, Balzer (2015) examines the debates about the Stalinist system, and the “issues of shame, moral debilitation, and cultural revitalization” (Blazer, 2015). For example, debates about how to understand, teach, and memorialize the significance of the Stalinist system are analyzed, as are issues of shame, moral debilitation, and cultural revitalization.

4.3.7 “Educated exiles”

The humanities form the image of Siberia associated with a special type of interpersonal communication; this image has been shaped largely because of the migration of the educated population (the Decembrists and some other educated people, who were exiled to Siberia, or voluntary moved to this region because of different reasons). “It was terra incognita for the imperial authorities, academia, and the educated public, a region forgotten by the capital but in need of local government reform (indeed it was included in the reforms of the 1860s-70s), connections with European Russia by rail, water, and land, intensified agricultural production, better schooling, its own university, educated and motivated officials, and the abolition of exile” (Matkhanova, Rodigina, 2019: 836). The history of migrations in Siberia has led to Siberia becoming a mega-region consisting of different territories. These territories were united because of their geographical position and common history. Despite the great differences between the people who “came to Siberia from different parts of Russia (and not only from Russia) because of the different migration processes, the harsh living conditions resulted in a common lifestyle, and triggered the process of “socio-cultural diversification”” (Suprun, 2016: 124), which united those groups of people in a big group of Siberians with their own traditions, lifestyles, and a cultural pattern different from those of other parts of Russia. These groups have been shaped around the active intellectuals, those educated outcasts who moved or were exiled to Siberia because of their

worldviews, and were determined to change the life around them for the better.

4.3.8 “Striving for freedom”

This group of images is connected with the isolated location of Siberia, and its remoteness from the Central part of Russia. Siberia is described as a former province, some kind of extension to the Great Steppe and the place of settlement of freemen and outcasts. This is the reason why Siberian people have commitment to and freedom independence. Turbovskey (2015) considers that Siberian people perceive this geographical remoteness from the capital as a pre-condition of greater individual freedom and freedom from the political conjuncture. There is a number of publications that underline the striving for freedom of Siberian people. Cherepanova et al. (2017) define the predominant beliefs, values, attitudes and ambitions of young people living in Siberia at the beginning of the 20th century; they found that they “praise certain virtues and human qualities, including bravery, courage, honesty, spiritual purity and freedom” (Cherepanova et al., 2017).

4.4 Technology and innovation

Siberia can be interesting to the researchers as the area of experimenting in extreme living conditions that check for strength not only people but also technologies, whose development improves peoples’ quality of life even in unfavorable weather conditions.

4.4.1 “Extreme conditions”

In order to survive in the harsh conditions, and increase the quality of life in Siberia, people had to create different kinds of innovations and technologies. First of all, they were connected with architecture. The contemporary architecture of Siberia was formed at the co-influence of different cultures and even civilizations (Volskaya & Bezhanova, 2017). The image of Siberia is supplemented by the images of “wooden architecture” (Saveliev & Polyakov, 2016), “fortress architecture” (Berezikov, 2016) and “defensive architecture” (Berlina et al., 2013). In the past, Siberia was a place of different fortification buildings: fortresses, ostrogs, horodnias, guard towers, and

others. These images characterize Siberia as a militarized land. At the same time, some researchers state that architectural monuments of Siberia combine different national and religious cultures; these architectural monuments have some potential from the point of view of fostering tolerance.

Today, there are conditions for new economic areas and science-based companies in Siberia, because the technologies that work in the conditions of Siberia, have high potential for functioning in any other areas with more favorable living conditions. For example, there are some special areas called “industrial parks” (Chirikhin, 2016); these are places integrating different industries. The industrial parks appeared in Siberian regions with uncomfortable living conditions; they developed the transport and social infrastructures, and created favorable working conditions. All these have increased the life quality of people and attracted new migrants to the territory of Siberia.

4.5 Business and management

Global changes can lead to the necessity of searching for the new basic rules of the world order and social management. The unique business and management experience of Siberia is reflected in the following generalized representations:

4.5.1 “Regional capitals”

Historical decentralization of Siberia originated a new term – “regional capitals”. In different contexts different cities (administrative centers) are mentioned as capitals: Krasnoyarsk, Novosibirsk, Omsk, Tobolsk, Tomsk, and others. (Yermolenkina & Kostyashina, 2013; Rybyakova & Goreva, 2014; Shcherbinin, 2013, and others). These cities have their own historical, moral and economic reasons to be called capitals. For example, Tomsk is often called a cultural and students’ capital of Siberia, as it has the biggest number of students per capita in Russia after Moscow and Saint-Petersburg. This experience can help, on the one hand, preserve the regions’ identity, and, on the other, overcome the lack of unity of the regions, countries and peoples that has appeared during the time of the pandemic, and not lose

the ability to mutual understanding of different peoples.

4.5.2 “Elusive country”

This image of Siberia appeared as early as in 1993 in Diment and Slezkine’s book (1993) that describes Siberia as a unique area “between heaven and hell”, inspiring and frightening, full of myths and contradictions. This is the image of “elusive country” connected with the region beyond the Urals that has been kept since that time, along with such images as “Russia’s alter ego”, a “frozen wasteland”, a “colorful frontier” the “heavenly or infernal antithesis”, and “shallowness of Russian life”. Siberia is a place with harsh climate, where indigenous peoples and migrants have to develop a “survival strategy” (Vinokurova, 2018) to adapt to severe conditions of Siberia.

4.6 Infrastructure and communications

Global environmental changes will probably make people build new infrastructure and communications. The infrastructure developed in Siberia, can serve a new alternative to the contemporary models accepted worldwide, some examples of which are shown by the following generalized representations:

4.6.1 “Asian Russia” or “Europe in Asia”

The geographical position of Siberia (common borders with China and South-East Asia) generated suspicious attitude from the European part of population conditioned by the differences between western and eastern mentality and can explain the image “Asian Russia” (Donskikh, 2017: 119).

Despite Siberia being described as a periphery and a distant area, it is considered a good place for establishing international cooperation. In the conditions of sanctions Siberia seems a certain oasis located far away from the politics; this atmosphere is favorable for establishing and maintaining international contacts in different industries, education, science and culture. Siberia can be viewed “as a basis for positioning Russia in the worldwide system of geopolitical relations” (Malov, 2015).

4.6.2 “A transit region”

The image of a transit region is combined with such images of Siberia that characterize its rich touristic potential. They are connected, first of all, with active rest and extreme sports: from mountaineering and mountain skiing to rafting, fishing and hunting. However, the image of Siberia as a place of eco-tourism is not mentioned very often, because eco-tourism constitutes a small part of the region’s economy (Kuznetsova et al., 2017; Gagarin et al., 2017, and others). However, Siberia is an important communication hub in Russia; its image is associated with the double-track Trans-Siberian Railway (called Transsib), with the Baikal-Amur Mainline Railway (called BAM), and the extended oil and gas pipelines.

5 Conclusion

In this paper, we identified the generalized representations of Siberia based on the integration of the images presented by Russian scientists in the international peer reviewed journals and publications by international researchers, and analyzed the images that constitute the generalized representations of Siberia. The analysis showed that the generalized representations of Siberia produced by the domestic and international audiences supplement each other. However, there are some distinctions. The images found in the papers by international researchers form the generalized representations of Siberia mostly with historical, archaeological, geographical, and ecological images, while images in the publications of Russian-speaking scientists are more detailed, and to this are added the images connected with people’s nature and the architecture of Siberian cities and towns.

For the domestic audience, Siberia also has some linguistic and cultural background, which has become an integral part of the Russian national consciousness. This produced such generalized representations as “Siberian genome”, “Siberian nomads”, “Educated exiles”, and others.

For the international audience, the images connected with Siberia are mixed with those of the North and the Arctic, while in the publications of Russian-speaking scientists

these images are separated. In the international scientific communications, there is an image of Arctic Siberia that does not exist in the publications of Russian-speaking scientists.

However, there are many generalized representations that can be found in both research; they are connected with the history of Siberia (e.g., “Hunter-gatherers”, “Pre-historic past of the planet”, “Stalinist system”, “Mammoths ivory”), the weather conditions of this region (e.g., “Perennially frozen ground”, “A harsh land”), and the severe climate and the labor camps of Soviet times (e.g., “Mega-region”, “A transit region”, “Elusive country”).

Most of the generalized representations of Siberia are typical for scientific communications regardless of the period of publications. However, it should be pointed out that in the context of the new global crisis, two new opposing generalized representations of Siberia (Siberia as “Climate paradise” and Siberia as “Climate dystopia space”) appear in the publications from 2020 to 2023.

In sum, our research about Siberia shows that Russian and international audiences produce common generalized representations about the unique environment of Siberia, specific living conditions and people’s lifestyle, innovations and active development. Therefore, we can use a combination of these generalized representations in positioning Siberia in Russia and all over the world.

The method we used for revealing the generalized representations of Siberia is applicable for any other region. The obtained generalized representations can have both scientific and applied significance: they can be utilized not only for researching but also positioning different regions. These generalized representations can further be used for developing new positioning strategies that might cause further interest in certain regions as they show their most competitive determinants of attractiveness, which can help effectively target high-priority audiences while positioning these regions. This, in turn, can increase their potential in attracting the human capital and have a

positive impact on the economic development of these regions.

Thus, we can conclude that Siberia is a unique region with considerable research potential. It is important to study this region “for constraining adequate models of ecosystem functioning under various climate change scenarios” (Pokrovsky et al., 2020). In addition, the interdisciplinary research of Siberia can contribute to scientific predictions of possible global changes in such contexts as environment and living conditions, natural resources, people’s lifestyle, technology and innovation, business and management, and infrastructure and communications.

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