THE TRANSFORMATION OF POPULAR SCIENCE JOURNALISM

ТРАНСФОРМАЦИЯ НАУЧНО-ПОПУЛЯРНОЙ ЖУРНАЛИСТИКИ

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The paper examines deontological values of popular science journalism. It investigates the reasons for their deformation in response to the commercialization of journalism. Commercial bias affects the conceptual framework of content and reveals itself in the large proportion of purely entertaining material and sensationalism. Topics selected for key stories mostly focus on

tourist hotspots attracting international visitors. This paper aims to show how the transformation of deontological values entailed the conceptual transformation of a popular science magazine. The study draws on the data obtained from several similar periodicals. Not only does mass media satisfy the need for information shaped by a person's outlook, it also forms their outlook. A magazine containing articles about theoretical or pilot studies in a particular field of science, culture, or practical activities serves to disseminate knowledge and encourages self-education. The formation of popular journalism deontology involves methodological, cultural and typological aspects.

Key words: *deontological values, popular science journalism, commercialization of journalism, travel journalism, innovation journalism.*

В статье приводится анализ факторов деформации деонтологических ценностей научно-популярных периодических изданий в условиях коммерциализации журналистики. В изданиях, движущей силой которых становятся финансовые показатели, происходят сдвиги в концептуальном содержании публикаций: подавляющее большинство материалов носит развлекательный и сенсационный характер, а заглавные статьи посвящены обзорам популярных туристических направлений. Цель настоящей статьи – показать, что концептуальная трансформация научно-популярного издания является следствием трансформации деонтологических ценностей. Материалом исследования послужили данные нескольких периодических изданий близких форматов. Функции СМИ не ограничиваются удовлетворением информационных потребностей личности – они также призваны формировать мировоззрение. Журнал, публикую-

щий статьи о пилотных или прикладных исследованиях в отдельной отрасли науки, культуры и других видах деятельности, служит источником знания и содействует самообразованию. Деонтология научно-популярной журналистики охватывает методологические, культурные и типологические аспекты.

Ключевые слова: *деонтологические ценности, научно-популярная журналистика, коммерциализация журналистики, трэвел-журналистика, инновационная журналистика.*

Introduction

Popular science press is an intellectual resource. It should, presumably, fill the need for knowledge about the world. The half-life of knowledge concept, regarded as the amount of time that elapses before the knowledge a person gets during training becomes superseded or obsolete, implies the necessity of regular updates. This is where specialized editions come in handy. A modern popular science magazine modifies knowledge in a creative, even playful, way. This, however, does not mean the priority of entertainment functions. A popular science magazine, part and parcel of media education, simply cannot swap educational and informational content for entertainment. A failure to preserve this content will pose serious problems to survival and preservation of resources that allow humanity to exist. The effectiveness of popular science magazines will definitely benefit from the optimization of operations. This communication channel is vital to the performance of science, if the agenda is the dissemination of knowledge about the reality and the struggle against pseudoscience. Russian culture has always valued

knowledge, and science therefore enjoys a privileged position in Russian public life. Popular science magazines in Russia focus on the integration of science and the synthesis of science and human knowledge. The paper does not aim to show how science is covered in print mass media in the West or in the East, rather, it focuses on the two models of a popular science magazine, i.e. Soviet and a post-Soviet, or pro-Western, types. The Soviet model does not include advertising and, therefore, is devoid of utilitarian functions. Instead, it strives to preserve deontological values and traditions of journalism. The post-Soviet model is driven by the financial interests of advertisers, publishers, businessmen, and others. This constitutes a major difference between Russian popular science periodicals and their European counterparts. At the same time, the Russian media industry has witnessed the emergence of a new field that may generally be referred to as innovation journalism. This new trend in journalism focuses on commercially successful scientific achievements that are making their way into everyday life. This is what makes it different from science or popular science journalism. Its purpose is to attract a mass readership to issues of Russia's innovative development as one of the major factors shaping the society of tomorrow. It is important to consider that the promotion of science is not synonymous with the promotion of innovations. Investors are interested in funding a business, not an idea or a discovery. Science and scientific discoveries today get their value only as a part of the process by which innovation journalism acts as an intermediary facilitating communication between academia, business, and government. In this respect, innovation journalism with both mass and niche periodicals becomes a useful tool. Innovation journalism is a very promising development example for popular science periodicals and may help to revive deontological values.

Discussion

Popular science journalism:
A historical overview of conceptual content

Akopov points out the exceptional role of the first science periodicals in promoting science. He believes that special releases on various branches of science led to the emergence of popular science magazines as a type of publication, making them an independent and indispensable part of culture (Akopov, 2002). Magazines target different categories of readers. A magazine is a unique aspect of the cultural scene as the emergence of any new type indicates the maturity that a certain social group has reached. According to Sokolskaya, "A magazine acts like an indicator for the need to constantly update information on points or subjects of personal interest" (Sokolskaya, 2006: 18). Shostak describes magazines as the type of print media responsible for science education (Shostak, 2007).

In the late 1980s and early 1990s, popular science magazines were tasked with increasing ecological awareness. This subject was covered in compliance with the international ethical principles of journalism. Magazines started publishing controversial stories that had been hushed up for years. Before that, journalists had no access to these data. Publicizing such data was regarded as a threat to national security and was subjected to a criminal prosecution. Kalinina observes, "This was the time when the interest in ecology reached an all-time high: environmental issues made headlines in newspapers and magazines, were widely broadcast on radio and televised nationally" (Kalinina, 2012). In 1990, Ekos-Inform, a high-quality magazine published in Russian and English, was established. In 1992, the Russian market welcomed two other new periodicals: "Eurasia Monitoring" (today known as "Eurasia: Priroda i Chelovek" and "Greenpeace v Rossii"), a newsletter which

gradually transformed into a magazine currently available online. By the mid 1990s, the interest in environmental issues decreased considerably as the government invested less and less effort into tackling environmental issues and the press was battling to survive in the most severe economic crisis of the 1990s (Kalinina, 2012). Popular science magazines no longer highlighted the ecological perspective, diverting their focus instead to mythology, astrology and paranormal phenomena. Environmental issues were dealt with in the media in case of utter emergency caused by global environmental hazards: disasters, waste emissions, cataclysms, epidemics, etc. As Orekhova puts it, in today's press, ecological issues stay in the background (Orekhova, 2000). Even the most pressing issues are found only on the last pages.

In the 1980s and 90s, tactical and strategic communication within the field of popular science magazines lacked consistency. The sector split in two with the quality popular science magazine committed to deontological values on the one side, and the servile magazine, i.e. a dramatically different popular science magazine, on the other. The latter embraced commercialization, diversification of content to accommodate advertizing, convergence, infotainment, and, finally, switched to a glossy format. The influx of capital was facilitated by several factors. Firstly, when it came to print media, Russian legislation imposed ownership restriction on foreign companies. Secondly, cutting-edge technologies imported by Western glossy magazines showed the advantages offered by visual content over text, allowing impression to take priority over content. A popular science glossy magazine does not aim to alert its audience to environmental issues or provide critical information. Quite the opposite – it tries to adorn the everyday and create the festive mood that a person choosing a travel destination is supposed to have.

Thus, the educational function dominant in the early years of popular science press gave way to information and entertainment content, which is still in demand today. This functional transformation was caused by socio-cultural changes in social values and norms. While periodicals do exist, it hardly seems possible that they will ever gain original circulation numbers. Science is no longer popular with a mass reader. The circulation of reputed popular science magazines, such as "Nauka i Zhizn", "Znaniya – Sila", "Khimiya i Zhizn", "Priroda", "Zemlya i Vselennaya" has fallen by roughly 80 times (Vaganov, 2007).

The circulation of popular science magazines is indicative of the changing attitude of society toward science and technology. Declining circulation of science and popular science magazines was triggered by the low profile of science and the lack of public interest in science. Solving this worldwide problem necessitates considerable investment and mobilization of political will. To cite just one example, in his annual address to the Federal Assembly, Vladimir Putin singled out nanotechnology as the locomotive of Russia's scientific and technological development strategy. About 180 bln. rubles was allocated to enable Russia to become a nanotechnology nation (Putin, 2007). This was immediately followed by a surge in publishing activity. However, Russia does not carry out any state policy regarding popular science magazines. The criteria for financial support of popular science press lack clarity. A popular science magazine is driven to survive; hence, its editorial policy and the communication of values are determined by consumer demands.

Popular science journalism: factors of diversification

The mid 1980s witnessed an ever increasing cultural exchange and import of goods from the West. Affluent lifestyle and consumption became ideology. Society grew addicted to glamour and tourism.

Bauman claims that globalization has numerous definitions, among which the "revenge of nomads" seems the most appropriate, if not the best (Bauman, 2001). Sociology offers a number of concepts that treat ideology as a set of discourses that use mass media to communicate their values (Althusser, 2000). Within this study, "National Geographic", "GEO", and "Condé Nast Traveller", the three most popular science brands of American and Western journalism, were chosen to illustrate this assumption. These brands regarded the new market sector as the "cash cow". Their format was used as a model to launch "Vsemirny Sledopyt", a new publication, and rebrand "Vokrug Sveta", the oldest Russian magazine. However, the rebranding effort to make "Vokrug Sveta" competitive against "National Geographic", "GEO", and "Condé Nast Traveller" did not pay off. Today, local editions of international popular science magazines dominate the market; they enjoy almost one and a half times wider circulation and the greatest share of advertizing.

The effectiveness of information and communication functions of journalism depend primarily on content, which has to meet three basic audience needs: to inform, to educate, and to entertain. "National Geographic", "GEO", and "Condé Nast Traveller" do well when it comes to informing and entertaining their readers. Their needs are satisfied when proper content is provided because content is, at any rate, information. Information and knowledge are intangible values, a major economic resource and the driving force of economic activity. The problem is that the content of "National Geographic", "GEO", and "Condé Nast Traveller" is infotainment filled with advertisements and sensationalism. Their content is largely made up of news and sensational stories about the most desirable tourist destinations in the world. This is "alien" Western content that will definitely fail to instill a love and pride of Russia.

Conceptually, a servile popular science magazine focuses excessively on consumption rather than knowledge. Competitiveness, efficiency and profitability of such magazines depend on consumers, who look for information on hotels and their services and seek enjoyable shopping and culinary experiences when visiting famous tourist destinations. Baudrillard described consumption as a contemporary phenomenon peculiar to the affluent society where each individual member is constantly involved in a deep, intense process of exercising their consumer choice to keep their household up-to-date (Baudrillard, 1996). As travel magazine shows rapid growth, some popular science editions are switching to Lifestyle (LS) format. Alvin Toffler compared such magazines to factories producing models of lifestyles. If the business interest of popular science magazines subsides, then the ones that stay afloat are those magazines with the consumer in mind, i.e. the ones that manage to diversify their content by becoming glossy publications.

Gudova, citing Anderson, a renowned sociologist and editor of "The City Magazine", points out the exceptional role of both glossy magazines and the income-generating tricks this industry plays in forming the new type of consciousness. A growing number of people are opening up a glossy magazine to identify themselves and build ties with other people in entirely new ways (Gydova & Rakipova, 2010), i.e. by browsing, reading and discussing the latest issue. The latter is instrumental in communicating and shaping a certain mindset. The mindset, in turn, reflects the outlook and attitudes of both publishers and customers of advertising. From an economic perspective, a popular science periodical is a promising investment opportunity with financial gain as a driving factor of its performance and a major factor of its success as a media enterprise (Korkonosenko, 2011).

Foreign and Russian scholars alike consider LS magazines a powerful source of information and an effective tool to impose

patterns of behavior and ensure they become reality. Lately, much media research (both theoretical and applied) has been focused on manipulation techniques applied by LS magazines. Among them are messages promoting hedonistic stereotypes and consumption. What unites them all is an ideology of success irrespective of gender. Success is about a good job, a great career, a premium car, trips to exotic destinations and holidays at luxury resorts. This lifestyle is communicated via conceptual messages, e.g. "live your life to the fullest", "nothing is impossible", "program your mind for success", "become a star", "listen to your heart", etc.

Popular science magazines set themselves apart from other media products as their consumption is determined by the ideological stance of the consumer. In this case, an exchange value is the price you pay to access information about a healthy lifestyle, possible holiday destinations, or celebrities, whereas a use value is the extent to which these needs were satisfied. The latter will vary depending on individual perceptions. The perception, in its turn, is shaped by abundant photography and graphics mostly featured in advertisements. The use value determines the demand for each particular magazine.

It is important to underline that mass media not only satisfies the need for information shaped by a person's outlook, it also forms their outlook.

As Korkonosenko notes, mass communication is capable of strengthening old norms, creating the new ones (affecting new aspects of social life), or changing them radically. This observation is crucial when the press questions ideological or ethical postulates, addresses national or religious issues, or interrogates similar aspects of a belief system (Korkonosenko, 2011). Changes in outlook may affect the market size and structure of demand. Similar changes may be brought on by new achievements in science or a rapidly developing

IT sector. A magazine containing articles about theoretical or pilot studies in a particular field of science, culture or practical activities serves to disseminate knowledge and encourage self-education. This is, by far, the only type of periodical targeting a mass reader that encompasses deontological values.

Method and Deliverables

Popular science journalism is suffering an identity crisis. We are witnessing a massive failure of representation along with the diversification of content. The crisis is gaining momentum as the deontological principles are being eroded. Media products no longer play the part of responsible and ethical intermediaries between the complex world and the audience; rather, they act as agents who, in the pursuit of commercial success, pretend to fulfill a socially important educational function. This study uses content analysis and questionnaires to confirm its hypothesis about the diversification of the conceptual content in popular science magazines for a general audience. The keywords used in the study included "journey", "science", "knowledge", "food", and "shopping"; the search was limited to a time frame from 2009 to early 2015. The study examined over 50,000 articles from such magazines as "National Geographic", "GEO", "Condé Nast Traveller". The questionnaire contained questions about thematic and genre preferences. The assessment criteria included: number of stories about travelling and scientific discoveries; number of stories on current issues in science and ecology; variety of genres; accessibility and creative representation; responses to the relevance of topics; responses to the timeliness of issues; responses to the scope of a magazine.

The study of regional aspects of innovation journalism involved monitoring local publications to see if they contained materials about innovative development, implementation of cutting-edge technologies, scientific discoveries, etc. Textual materials were selected by the structure of content (headlines, topics) and key words and phrases relevant to science and innovation. This was followed by content analysis of media texts. The criteria we applied included topic of publication, category, author, date of publication, references to individuals and places, newsworthy events related to the regional level of innovation and research, and tone (positive, negative, neutral) of statements about science and innovation.

Conceptual framework of "National Geographic", "GEO", and "Condé Nast Traveller"

The conceptual framework of "National Geographic", "GEO", and "Condé Nast Traveller" reveals features typical for travel magazines: they target a mass audience, cover a wide range of topics, and include both educational and entertaining content. Thematically, magazines cover three key areas: travel stories (47%), popular science materials (31%), and socio-political articles (31%). Among the most popular topics regarding science are history (51%), physics (astrophysics, in particular, 29%), biology (genetics, in particular, 15%), and information technology (big data, gadgets, robotics, 5%).

This raises the question of how the potential audience perceives these magazines, i.e. as popular science magazines or, rather, as travelogues.

The audience, researched by their thematic preferences (the sample included 100 people), showed that the majority of respondents look for travel stories (83%), slightly fewer respondents are interested in science (74%), while others focus on socio-political

subjects (27%). The majority of the surveyed (86%) responded that they are interested in science and consider articles about science understandable and accessible. However, they also cited lack of scientific content. 9% of the respondents described textual material in magazines as unclear. It should be added, however, that they gave a negative answer when asked whether they read periodicals; the remaining 5% refrained from giving an answer.

The study also revealed that the respondents perceive "National Geographic", "GEO", and "Condé Nast Traveller" as travel magazines (63%) rather than as science magazines (34%). It should be noted that the opinions of the majority of the respondents who had previously read these magazines were divided: 20% considered "National Geographic", "GEO", and "Condé Nast Traveller" popular science magazines, whereas 21% rated them as magazines about regional geography. Those who had not previously read the magazines tended to label them as "travel magazines".

Innovation journalism as a thrust of development in popular science media

Innovation journalism is one of the tools used to disseminate scientific knowledge in the media. It raises the profile of science and promotes success stories and the commercialization of scientific discoveries. There are two approaches to define innovation journalism. Just a few years ago, researchers from Russian Medialogia used the concept of innovation journalism to describe media convergence, the state of the profession and the introduction of new technology into journalism (Dzyaloshinsky, 2007; Kravtsov, 2012). Today, innovation journalism is defined as a type of journalism that focuses on commercially successful scientific discoveries making their way into everyday life. Science and scientific discoveries today hold value only as part of the innovation process, which involves three

key stakeholders: academia, business, and government. The general public is engaged as a social environment for the innovation process and an intermediary between the other parties (Shuvalova, 2012). The key to the effective development of science and innovation is communication between all the stakeholders. Innovation journalism serves as a tool to establish this communication through specialized (science and specialized professional periodicals) and mass publications.

Media are beginning to take on new functions in understanding and explaining the value of each new invention to every member of society, including the layman. We assume that stories about scientific discoveries and innovation promote a favorable social, moral and psychological climate (taxpayers see the results of scientific activity and how the budget is spent). They also help instill loyalty to the government and business community and raise the profile of science, scientists and engineering.

A modern journalist has to keep in mind that each stakeholder in the innovation process performs their specific function. With this in mind, stories about science will appeal to a larger number of consumers. This approach is referred to as the Triple Helix concept developed by Prof. Henry Etzkowitz of the University of Newcastle and Prof. Loet Leydesdorff of the University of Amsterdam.

The triple helix symbolizes the alliance between government, business and academia as the key element of a country's innovation system. Academia, playing a major role, is also responsible for the capitalization of knowledge and the commercialization of intellectual capital. Business applies scientific methods to improve efficiency, creates subdivisions dealing with applied research programs, and collaborates with universities. Government catalyzes innovation and removes barriers to the diffusion of innovations, improving innovative business climate. The public is aware of the

need for innovation and is actively involved in its implementation (Seleznev, 2015).

In 2009, innovation journalism and communication in science shaped a separate area of professional practice. Communication in innovation uses specialized tools and approaches to bring together innovators and encourages open dialogue and cooperation to facilitate the joint production of innovation.

Tatiana Olkhovaya, Vice President of the Russian branch of International Association of Business Communicators (IABC / Russia), says that the communication of innovation takes place on two levels – horizontal and vertical. The horizontal level is the dialogue between stakeholders representing completely different sectors: science, politics, business, education. They speak different languages and may fail to reach an understanding even when they are discussing the same issue (Olkhovaya, 2015). At the vertical level, communication is established between innovators and the public. This level is perhaps even more important since innovation is not considered successful until it has been implemented and "it has become a part of everyday life" (Olkhovaya, 2015).

Thus, innovation journalism today is a communication tool to promote scientific knowledge and the production of innovation and to cover the innovation processes. However, our study has revealed that the role of innovation journalism is underestimated. There are cases when journalists fail to find a common language with a mass audience, especially when it comes to technology and innovation. Without proper communication of new ideas, products and services, the implementation of innovation is doomed to failure.

Journalists do not show enough understanding of innovation as a topic of media coverage despite the growing demand for this information. The results of our study conducted in 2009 by interviews with 460 citizens of St. Petersburg revealed that publications on

science and innovation drew the interest of 30.6% of a mass audience. By comparison, 38.6% of readers are interested in municipal news, 35.1% look for event announcements, 30.8%, prefer entertainment pages and billboards and 27.9% show the interest in political content. Besides these, the respondents mentioned public administration and useful consumer information (24, 9%); comments, opinions, conclusions (23.9%); fashion (7.5%); leisure and tourism (7.2%); society pages (5.4%), etc. (Pavlushkina, 2013).

Science and innovation in the local media

Popular science publications are a useful tool for evaluating a city's level of innovation. Our study draws on popular science articles from fontanka.ru, an on-line newspaper popular in St. Petersburg. Established in 1999, fontanka.ru is a major newspaper for a general audience and is one of the most popular electronic media sources in St. Petersburg. According to Rambler Top-100, fontanka.ru attracts 3.4 mln. individual users per month (Rambler, 2015). Its audience is made up of St. Petersburg citizens, business representatives and public officials.

At the beginning of the study, we monitored publications on the city's level of innovation and local scientific discoveries. From January 1st to June 30th, 2015, we obtained 43 stories from the website. To select relevant publications, the fontanka.ru search engine was used. Search quires included structural components (headlines, thematic sections) and content and keywords/expressions related to research and innovation ("innovation", "science", "introduction of new technologies", "inventions", "patents", "industry", "creation", "scientific discovery", "investment", "development and production", "modernization", etc.).

The analysis of sections showed that stories about science and innovation are distributed in several groups: "Construction" –

9 articles, “Society” – 9, “Business” – 8, “The City” – 7, “Technology” – 3, “Company News” – 2, “Life” – 1, “Lakhta Center” – 1, “Ask Yourself” – 1, “Good Deeds” – 1, “Real Estate” – 1. “Technology”, which is supposed to cover science and the like and seems to have the most obvious target audience, scarcely publishes articles about the achievements of the St. Petersburg research community.

This suggests that the editors choose science stories with the average citizen in mind. This is evidenced by the number of articles published in the section “Construction” (coverage of innovations used in the construction of residential estates and in urban development), “Community” (new technologies that increase the efficiency of mobile communication, news on education, new enrollment system for kindergartens, schools, etc.), “The City” (new payment system for public transport, the creation of a science and production facility at the innovation center St. Petersburg’s special economic zone, a magnetic levitation suburban train, innovative solutions for a large-scale spectacular senior prom The Scarlet Sails, etc.).

The “Business” section publishes materials for specific audiences. These include news on ecology, energy saving, the operation of a St. Petersburg LED factory and its cooperation with Finnish companies, partnership agreements, as well as news on the development of science and innovation triggered by the St. Petersburg International Economic Forum (SPIEF).

A glance at the frequency of the publications on the city’s science and innovation shows that the coverage, though not intense, is regular, featuring on average 3 to 7 news items per month.

March (7 articles), May (7 articles), and June (18 articles) proved to be the most informative. The abundance of publications in June is partly due to the SPIEF, where public and private

companies signed numerous agreements on science, technology and innovation. Additionally, fontanka.ru included articles about import substitution, the introduction of innovation to optimize production and overcome the effects of the economic crisis.

Innovations mentioned in the Internet edition fall into several categories that lend themselves to innovation, i.e. business (14 articles), construction (12 articles), education (5 articles), medicine (3 articles), mobile communication (3 articles), ecology (1 article), science (1 article), society and culture (3 articles) and production (1 article). Developments in IT are described in 9 news items. It is interesting to note that one of the articles highlights the central role of St. Petersburg in the development of the Arctic region.

Genres include news items (30), news summaries (3) interviews (3), features (2), news reports (2), reviews (2), and obituaries (1). Note that the obituary, despite its mournful tone, provides a detailed report on the contribution of Prof. Alexander Smolyaninov, General Director of Pokrovsky Bank of Stem Cells, to the development of the medical science. This explains why this item was included in the study. News items proved to be the most popular genre to talk about science and innovation. This is due to their concise representation and up-to-date information which avoids in-depth analysis and detailed explanation of the facts. That said, news items almost never explain what stands behind new concepts and terms.

Achievements and discoveries made by St. Petersburg scientists get better coverage in interviews (e.g. Kuznetsova, 2015), news reports (e.g. Ignatov, 2015), and features (e.g. The Virtual Construction Site vs. Drawing Paper and the Pencil (Dmitrieva, 2015). These articles contain a large number of specific concepts. As our next step, we identified the frequency of lexical units indicative of St. Petersburg's high profile as a center for science and innovation.

The word list comprises “innovation” (7 hits), “new” (7 hits), “European” (4 hits), “global trends” (2 hits), “implementation” (3 hits), “technology park” (2 hits), “energy efficiency” (2 hits), “technology” described as new, cutting-edge, innovative, modern (20 hits), “technical development” (6 hits), “modernization” (2 hits), “technological projects” (9 hits), “high-tech” (4 hits), “development” (2 hits), “effective solutions” (2 hits) “modern” (5 hits), “unique” (2 hits), and “digital revolution” (2 hits). Several units were used only once, e.g. “tailor-made”, “technological progress”, “quality mark”, “breakthrough”, “equipment with outstanding features”, “new generation”, “New Era”, “priority sectors”, “optimization”, “potential”, “new approach”, and “standard”. Unfortunately, the study did not reveal any such terms as “scientific discovery”, “Petersburg scientists”, “the best”, “number one”, “exceptional”, “invention”, “know-how”, “patent”, etc. If used, these could raise the profile of St. Petersburg as a center of science and innovation. Besides Academician Zhores Alferov, the Nobel Prize Winner, fontanka.ru gives no reference to other St. Petersburg scientists.

Out of the 43 texts studied, 28 texts on science and innovation were positive, 7 were negative, and the remaining 7 were neutral. 9 out of the 43 texts are promotional and were accordingly marked “for publicity purposes”. Different innovation-driven companies introduce different innovations. This diversity increases the chances of attracting potential customers. To put it differently, new technologies become publicity stunts.

Despite the seeming intensity of coverage at first glance, the news agenda seldom includes news items about particular achievements of the St. Petersburg science and local research community. This explains the low profile of St. Petersburg as a center of science and innovation despite the city’s obvious innovative potential.

The St. Petersburg list of innovation infrastructure numbers 350 items. St. Petersburg is home to the Science Center of the Russian Academy of Sciences with over 40 research institutes, St. Petersburg State University and its Science Park, 9 public research centers, 6 national research universities, as well as numerous accelerators and major business incubators, innovation centers, technology parks and research laboratories. Much of what happens there is not being covered by the online newspaper.

Conclusions

This historical and typological model of Russian popular science press is based on a multidisciplinary approach, embracing both science and art. The diversified popular science magazine of today is no longer viewed as a means of education. It is more likely to be regarded as a media enterprise driven by financial concerns. In talking about the globalization of media, scholars have always pointed out that the USA can no longer act as the only manufacturer of the world's system of meanings. Today, it is fairer to speak about a set of media images and meanings that absorb the particular needs and preferences of regional audiences. It is an average set of values that enables media enterprises to function effectively in today's global marketplace. Values can revive popular science magazines if they set their priority on education as means of developing and enlightening their readers. This requires a shift from income-generating polices of magazines that markets themselves as science periodicals to content-generating requirements. The latter implies a comprehensive promotion of scientific knowledge created by the exact sciences, the natural sciences and the humanities.

Since popular science magazines have much potential as a segment of the media market, they merit further research. Successful new projects are likely to arise, e.g. in the segment of historical magazines or, more broadly, magazines in human and social sciences. Another promising area of studies is represented by periodicals from the thriving segment of innovation journalism. This field of journalism is a marker of the country's innovative and scientific development and is crucial when it comes to the promotion of innovations and technological entrepreneurship. Understanding the specific principles of innovation journalism will allow, firstly, to identify the leverages it uses to impact the reader, secondly, to understand the tools it uses to promote Russian science and innovation, and, finally, to establish effective communication channels between the general public, academia, business, and government.

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