

Retoryka ruchów społecznych

Rhetoric of social movements

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“American scientists have discovered...” The image of the USA’s scientific output presented in the Polish opinion-forming press „Amerykańscy naukowcy odkryli...” Obraz dorobku naukowego Stanów Zjednoczonych w polskiej prasie opiniotwórczej

Abstract

The paper presents the results of the research conducted on the extensive corpus of press material. The purpose of the research was to show the frequency of references to the American scientific sources in the Polish press, specifically in popular science articles published in the weekly and daily papers. The analysis covered the period of 1975–2005 (and also the year 2015). The frequency of references to U.S. sources has been contrasted with the results on references to other countries (Poland, the former USSR, and Russia, in particular), as well as with the bibliographic data on the sum of citations of academic papers in individual countries. The research was carried out using quantitative methods (content analysis, bibliographic analysis of citations). The obtained results confirm the preference of the Polish popular science discourse for the sources originating from the Western culture, especially from the United States.

W artykule zaprezentowano wyniki badań podjętych na obszernym materiale prasowym. Celem badań było ukazanie częstotliwości powoływania się na źródła amerykańskie w polskim dyskursie prasowym, a konkretnie w artykułach popularnonaukowych zamieszczanych w tygodnikach opinii i wybranych dziennikach. Analizą objęto okres 1975–2005 (i wrywkowo także rok 2015). Badana częstotliwość przywoływania źródeł amerykańskich została skontrastowana z wynikami osiągniętymi przez inne kraje (w szczególności: Polska, ZSRR i Rosja), jak również z danymi bibliograficznymi na temat sumy cytowań dorobku naukowego poszczególnych krajów świata. Badania przeprowadzono metodami ilościowymi (analiza zawartości prasy, bibliograficzna analiza cytowań). Uzyskane wyniki potwierdzają zakorzenienie polskiego dyskursu popularnonaukowego w źródłach pochodzących z kręgu kultury zachodniej, zwłaszcza ze Stanów Zjednoczonych.

Key words

Americanization, bibliographical rankings of citations, media images of science, scientific output, media persuasion
amerykanizacja, bibliograficzne rankingi cytowań, medialne obrazy nauki, dorobek naukowy, perswazja medialna

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“American scientists have discovered...” The image of the USA’s scientific output presented in the Polish opinion-forming press

Throughout centuries, various media have presented and related events happening in reality. These accounts – although based on facts – highlight different angles of the situation and convey to the audiences particular points of view. Therefore, media representations of reality cannot be perceived as its reflections (in fact, this stance is often regarded as naive), but rather as its (re)constructions (Jørgensen and Phillips 2002, 5-6). They are discrete, fragmentary and nonholistic, because they embrace only the parts of the world that are included in the media discourses. The constructions form media images of various parts of reality (it should be noted, though, that the term ‘image’ refers not only to visual codes; images are multimodal, they employ both visual and verbal codes, see: Goodwin 2000; Jewitt 2014; Jewitt et al. 2016; Kress and van Leeuwen 2001; Norris 2004; Norris 2016; Norris and Maier 2014; Scollon 2001). Therefore, we can say that the media do not just give us information about reality but rather their version of what they see in it. Audiences following these media images of reality create their own versions of what they see or read in the media, thus forming their own observations. This process leads to the formation of the so-called *strategic reality* (Michalczyk 2008, 45).

Media representations of reality can be studied using one of the numerous methods of content analysis. According to McQuail (2000, 305–306), there are eight types of possible applications of content analysis (see also: Michalczyk 2008, 263–264). As the second application, McQuail lists comparative studies of the ‘social reality’ and its media representations that are conducted in order to determine the degree of interrelationships between these phenomena (again, we must not be tempted to call them simply reflections; see also Pisarek 1983). In the presented paper, this approach is employed to discover how much (or how little) the media image of science reflects ‘real’ conditions of science in various countries in the world.

This study was undertaken a rich and diverse material of press texts (as described further), but it was limited in scope. The results do not represent a comprehensive press image of science, but a specific part of it, taking into account the presence of references to the scientific achievements of different countries of the world, specifically the USA. The research has attempted to answer two fundamental questions: what countries are visible on the map of the world sketched by the Polish press, and whether (and why) reports of American scientists' achievements play a prominent role in the Polish press discourse.

The invocations of scientific research serve various persuasive purposes. They can be an element strengthening the ethos of a given magazine, and thus authenticating the message. They appear as an argument in a journalistic article, while scientists act as the authority (for functions of citations in science see: Amsterdamska and Leydesdorff 1989, Leydesdorff and Amsterdamska 1990, Leydesdorff 1998, Marszakowa-Szajkiewicz 2009). In another case, the results of scientific research are presented to attract the attention of recipients, to surprise, entertain, or even shock the audience. They can also be considered as a form of rhetorical influence on the readers' attitudes, when the quoted studies are intended to change the opinion or behaviour of the audience. The analyses presented in this article do not focus on single references to scholars and their research. They concern a wider phenomenon in order to show the rhetorical meaning of quantitative data.

The impact of the United States on culture, media, and politics in European countries has been the subject of much research. The term "Americanization" (or "Americanism") has been used to describe the flow of ideas from North America to Europe (which started in the 1920s), and, subsequently, to other cultures around the world. In this transfer of ideas, the United States has been acting as a donor, thanks to their imperial position, which was based primarily on economic and military power. Often, the phenomenon described by this term has been rated as negative. In stereotypical terms, Americanization, by promoting American culture, values and patterns of behaviour, leads to unification, and is associated with the blurring of individual countries' identities and the globalization of culture (see: Fröhlich 1997, 169–182; Magu 2015, 632–635).¹ However, the American influences embrace not only the culture and economy, but also include the transfer of knowledge. In this respect, does the flow go from the United States to other countries in the world? By analogy with culture, the answer to this question seems obvious. However, if we take into account the situation of Poland, which was

1. It should be noted, though, that the meaning of 'Americanization' presented above is not listed in the definition of this term in reference sources. For instance, Encyclopaedia Britannica defines Americanization as "activities that were designed to prepare foreign-born residents of the United States for full participation in citizenship. It aimed not only at the achievement of naturalization but also at an understanding of and commitment to principles of American life and work." <https://www.britannica.com/topic/Americanization>

under the Soviet influence in the post-war period, it seems appropriate to examine to what extent the flow of knowledge from the West was hampered by the censorship. This paper attempts to quantify the presence of references to the scientific output of American scientists presented in the Polish press and to compare it with the presence of the references to the research from other countries, including the former USSR and later Russia.

In the content analysis employed in this paper, the unit of measurement was a reference, including a place or personal name, the scientific activity of a person or the scientific achievement of a country. Sometimes these references were presented as quotes from a scientist's publication or in the form of indirect speech (following the schema: "X said that ..." or "According to X, ..."). Moreover, the indication of the countries' names in the context of scientific activity were also treated as references. This is illustrated by the following example: "The discoveries were made by a team of Swiss archaeologists from the University of Basel under the direction of Helena Ballin, conducting excavations in cooperation with Egyptian scientists."² The sentence includes three references – to the groups of (1) Egyptian and (2) Swiss scientists and (3) to an individual Swiss scientist. In the coding process, these references would be assigned to these two countries and additionally further subdivided into categories: individual and group.

The research material included the articles devoted to science, published in Polish opinion newspapers – weeklies and dailies. The study was conducted in ten-year intervals, from 1975 to 2005. A total of 3,096 issues of the selected press titles were analysed, with 5,276 articles devoted to science included there.³ In addition, a comparative sample of the *Newsweek. Poland* weekly from the year 2015 was analysed – 52 issues, containing 101 popular science articles. This is a rather meagre sample, compared to the material collected during the original study. So, the results of the comparisons should be treated with caution.

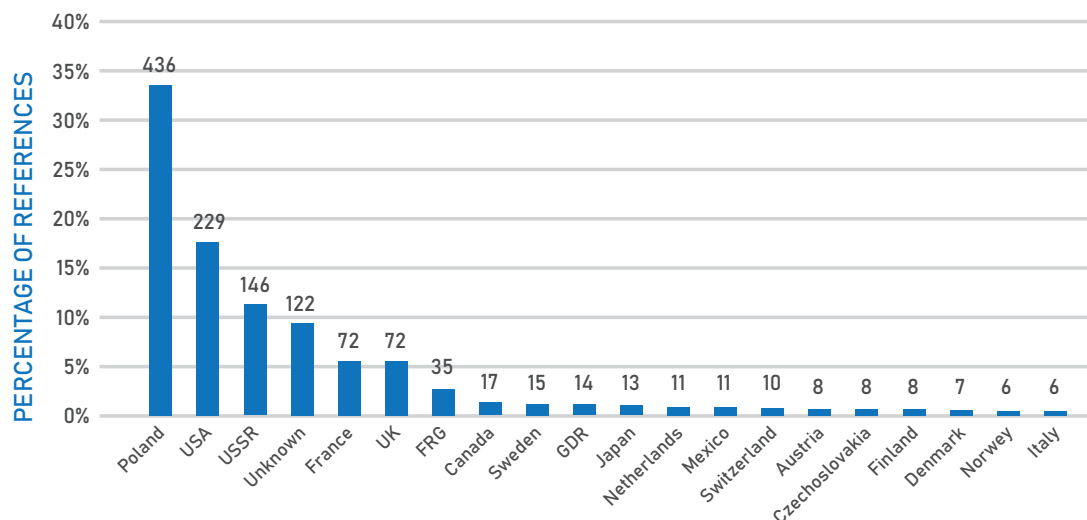
The results of the research undertaken on the material from the year 1975 confirm what was said about the flow of knowledge in the Communist regime (see Chart 1). The most frequently mentioned country was Poland, and the description of Polish scientific achievements was the most popular subject of the press articles, but the references to the United States ranked second. The Soviet Union came in third, with 146 references. Other ranks are occupied predominantly by Western European countries. What seems to be symbolic is that in the 1970s, during the

2. Original text: „Odkrycia dokonał zespół szwajcarskich archeologów z Uniwersytetu Bazylejskiego pod kierunkiem Heleny Ballin, prowadzący prace wykopaliskowe we współpracy z egipskimi naukowcami” [author's translation]. See: *W Egipcie odkryto grobowiec faraona. Zawiera prawie 60 mumii* [online] <http://www.newsweek.pl/wiedza/nauka/egipt-odkryto-grobowiec-w-dolinie-krolow-newsweek-pl,artykuly,285068,1.html>

3. The list of the selected Polish press titles included: *Dokoła Świata, Gazeta Wyborcza, Gość Niedzielny, Kulisy, Kultura, Newsweek, Panorama, Perspektywy, Polityka, Prawo i Życie, Przegląd, Przekrój, Razem, Rzeczpospolita, Trybuna Ludu, Tygodnik Powszechny, Veto, Wprost.*

Cold War, the Polish press discourse on scientific achievements remained, to a large extent, “Americanized.”

Chart 1. Percentage of references in 1975 (own work)⁴



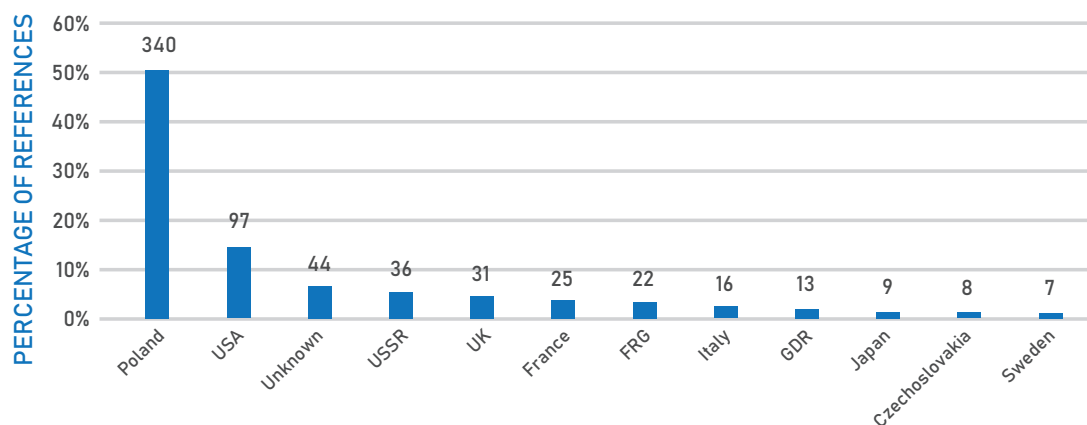
Excluding Polish achievements, whose high position in the examined material is understandable, the American output was most often referred to in the press in the context of such disciplines as medicine, biology, physics, geology, and even history. In turn, the Soviet Union's achievements came ahead of other countries in the following disciplines: astronomy, archeology, geophysics, and geography. It should be noted, however, that these disciplines were relatively less popular than medicine and history, thus references to the scientific achievements of the Soviet Union were significantly overshadowed by the frequent presence of the references to the United States' scientific output.

Ten years later, in 1985, Poland was in a period of a massive political, economic and social crisis. The communist regime wavered in its foundations, and the answer to these problems were far-reaching measures to consolidate the Eastern Bloc. It should be assumed that these conditions will be reflected in the press texts, including those concerning the popularization of science. However, as we see in Chart 2, the Soviet Union did not move into the lead in the ranking of countries most frequently referenced in the context of their scientific activities. Poland was still the leader (texts are naturally “Polish-centered”) and the USA came in second. The fact that the United States (and other countries) were referred to less

4. The chart shows the ranks of 20 countries with the highest percentage of references (the countries which scientific achievements were mentioned in the press more than 5 times).

frequently can be considered a symptom of the crisis. This is evidenced by the fact that the Polish press of that period appeared more closed and focused on describing Polish achievements.

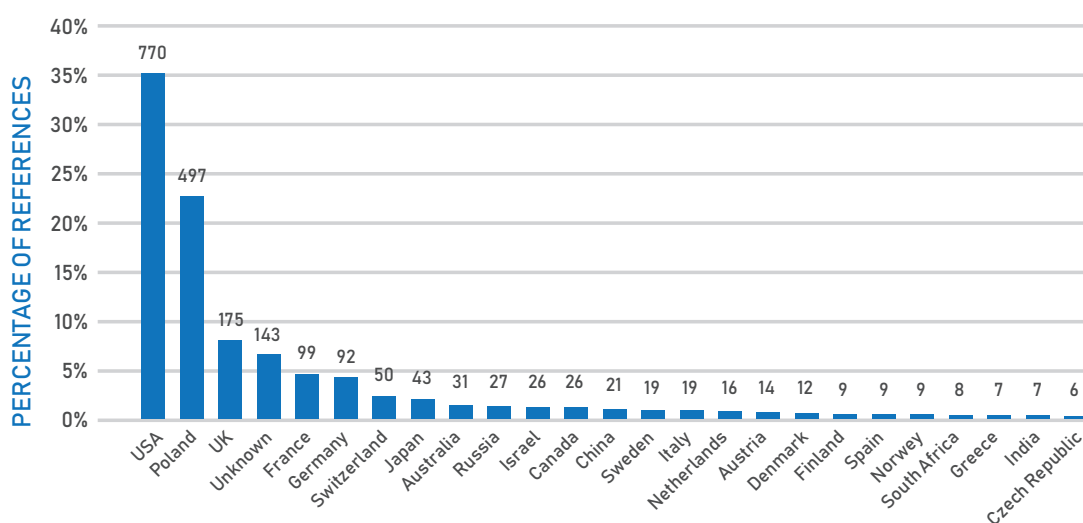
Chart 2. Percentage of references in 1985 (own work)⁵



Just as in the results for 1975, if the Polish scientific achievements are omitted, the United States turns out to be the leader in the following disciplines: medicine, psychology, biology, biochemistry, cybernetics, energy, archeology, while the achievements of the Soviet Union stood out from other countries only in astronomy and physics. It is also worth noting that the Soviet Union moved down to the fourth rank, behind the so-called “unknown” (this category was used when the press referred to some scientific achievements of people, but did not mention their affiliation, so that in the coding process they could not be attributed to any particular country).

The next results come from the analysis of the material from the mid-1990s. At that time Poland had undergone a system transformation; censorship had been abolished and new press titles appeared. With the demise of the Soviet domination, Poland ceased to be a country politically oriented towards the East, and, instead, eagerly chose the Western direction (this is of course not a geographical direction, but, understood metonymically, stands for the acquisition of the Western cultural and political patterns). The results are shown in Chart 3 below.

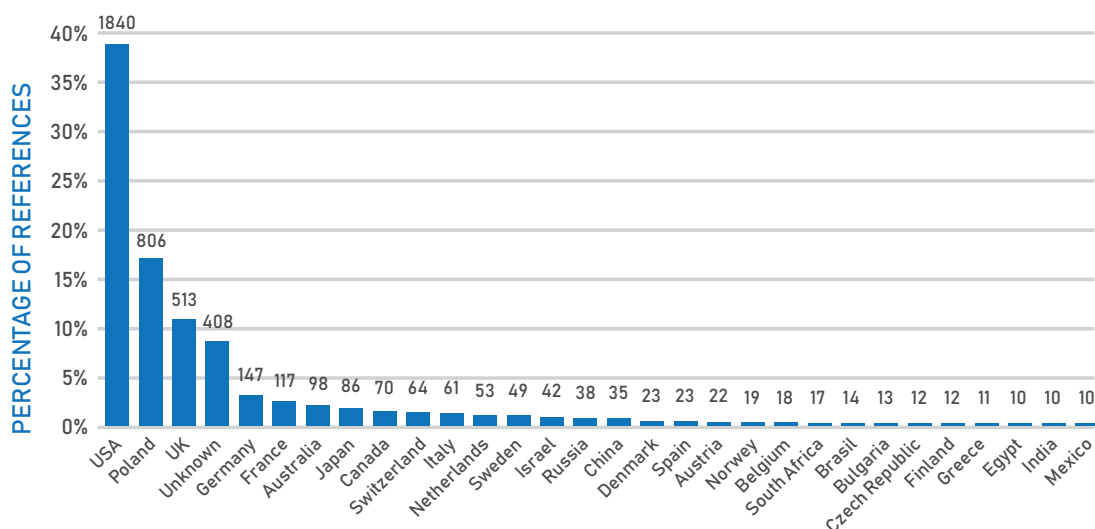
5. The chart shows the ranks of 12 countries with the highest percentage of references (the countries which scientific achievements were mentioned in the press more than 5 times).

Chart 3. Percentage of references in 1995 (own work)⁶

The results presented in Chart 3 show that, indeed, the Western direction of the flow of knowledge is more frequent than the references to the scientific potential of other countries. After the 1989 transformation from communism to democracy, the studied references in the Polish press indicate that the United States came to the first position in the ranking, ahead of Poland. This demonstrates the fact that the Polish press discourse was no longer Polish-centered and became American-centered. When it comes to the scientific disciplines in which the American scientific output is referred to, they are the same as in the material from earlier sub-periods and features medicine, biology, and microbiology. Astronomy also appears here (after the collapse of the Soviet Union, Russia no longer functions in the Polish discourse as the leading country in this discipline), as well as genetics, biotechnology, and psychology. If the United States is no longer the leader, it is only for the sake of Poland, including such disciplines as: archeology, geology, history, biocybernetics, ecology, and chemical technology.

Americanization in the Polish press discourse is even more evident in the 2005 material. The results confirm what was said in the analysis of the previous sub-period. There is an even greater gap between the citations of American and Polish scientific sources (see Chart 4) – there were 1,000 more references to the American scientific output than to the Polish one. The next positions in the ranking are occupied mainly by European countries or countries related to the Euro-Atlantic civilization.

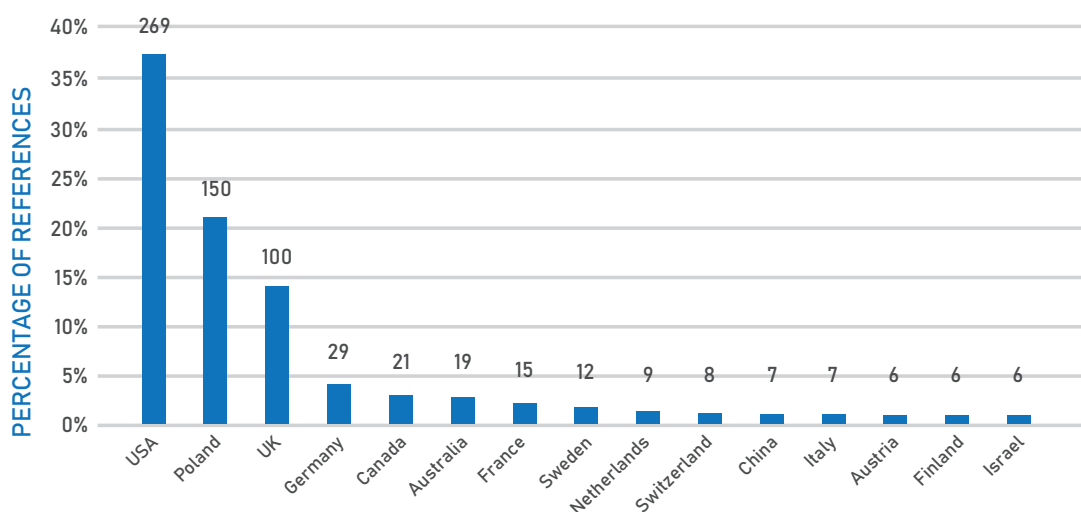
6. The chart shows the ranks of 25 countries with the highest percentage of references (the countries which scientific achievements were mentioned in the press more than 5 times).

Chart 4. Percentage of references in 2005 (own work)⁷

In almost all disciplines in the Polish press of that period, these were the American scientists who were mentioned most often. These disciplines include, as in 1995: medicine, biology, astronomy, psychology, genetics, biotechnology, physics (to name the most popular). Only in the fields of archeology and history has America yielded its first place to Poland.

In a relatively small comparative sample taken from the *Newsweek* weekly from 2015, the popular science articles describe the scientific achievements of the countries, whose ranking is similar to what we could see in 2005. Once again, American achievements are most often mentioned, with Poland ranked second, followed by Great Britain. The category “unknown” disappears, and the fourth position is occupied by Germany. The Americentrism of the press discourse appears to be justified when we analyze the *Newsweek* content. This is a title issued by Ringer Axel Springer Polska under a Newsweek Inc. license. It is one of the six non-English editions of the American weekly *Newsweek*. The fact that American scientists are often quoted there and that there are frequent references to their accomplishments is certainly due to ownership rights and relations.

7. The chart shows the ranks of 30 countries with the highest percentage of references (the countries which scientific achievements were mentioned in the press at least 10 times).

Chart 5. Percentage of references in Newsweek 2015 (own work)⁸

The results presented above show that in the popularization of science, the Polish press discourse remained Americentric – not only after the transformation in 1989, but also before this political and social breakthrough. Looking for the possible causes, one must go deeper into the history of Poland, which shows long relations with Western European countries. Throughout centuries, Poland was not only a passive recipient but also an active donor. The results of the study appear to confirm the hypothesis that these long relations have not been severed by the Soviet domination.

In addition, one more explanation can be given for a clear preference for American scientific achievements. Comparing the rankings of the countries mentioned in the Polish press with the bibliographic rankings, one can see a large convergence of the presented data.⁹ These rankings were compared using Pearson's correlation coefficient. The results are presented in the table below (Table 1).

8. The chart shows the ranks of 15 countries with the highest percentage of references (the countries which scientific achievements were mentioned more than 5 times).

9. The bibliographic rankings are based on data on the number of scientific publications affiliated to specific countries and on the number of citations of papers affiliated to countries. In order to present correlation data for the years 1975 and 1985 I developed bibliographic country rankings on the basis of raw material from Web of Science (<http://wokinfo.com>). For the years 1995, 2005 and 2015 I employed ready-made country rankings based on the number of publications and the number of citations, created by Scopus (Scimago Journal & Country Rank, <http://www.scimagojr.com/countryrank.php>). It is worth mentioning that comparing the references in the press with citations of scientific papers has a greater cognitive value than comparison of references with the number of scientific papers, because the references in the press can be treated as analogous to citations (bearing in mind, though, that they appear in the press discourse).

Table 1. Press and bibliographic country rankings – correlation

| Correlation between | 1975 | | 1985 | | 1995 | | 2005 | | 2015 | |
|---|---------|----------------|---------|----------------|------|----------------|------|----------------|------|----------------|
| | All | Without Poland | All | Without Poland | All | Without Poland | All | Without Poland | All | Without Poland |
| Number of papers and number of references in the press | 0,24 | 0,49 | 0,19 | 0,92 | 0,80 | 0,95 | 0,88 | 0,95 | 0,69 | 0,76 |
| Number of citations of papers and number of references in the press | No data | No data | No data | No data | 0,83 | 0,99 | 0,89 | 0,97 | 0,79 | 0,88 |

The results shown in the table should be interpreted as the existence of a strong positive correlation between data ranges if Pearson's correlation coefficient is greater than 0.5. In fact, in all these years, this correlation was strong if we exclude Poland from the ranks of variables (as noted above, Poland is an obvious choice for authors presenting scientific achievements, and if so, this choice is not very significant). A correlation is even stronger when we compare the number of references in the press with the number of citations of scientific papers.

In conclusion, such a distribution of countries referred to in the Polish press may be the result of various factors. As mentioned above, the scientific criterion could have a decisive influence. Popularization of science in the press has spread the scientific achievements of America and other European countries, because these achievements actually exist and are significant. For that reason, the United States was ranked at the top of the list in each of the study sub-periods. The linguistic criterion of convenience and ease of use also makes it possible for the authors of popular science texts to refer to English-language sources (sometimes only by translating what they find in resources of international news agencies). The above mentioned cultural (or civilization) criterion also justifies the preference for scientific Western European and American sources. Americanization, manifested in promoting the transfer of American cultural values to other parts of the globe, is supported by the strong economic position of this country and capital flows. In contrast, the influence of the political or ideological criterion is weakening. According to this criterion – for the sub-periods 1975 and 1985, when Poland was under the Soviet domination – the USSR scientific sources would have to be promoted in the press. However, as we have seen in the results of the analysis, the

USSR was at fairly high places in the rankings, but never took the lead, always giving way to the United States.

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