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Science diplomacy of Poland

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Science diplomacy (SD) has recently gained unprecedented attention as a subject of both an academic enquiry and political discourse. Thus, states employ many efforts to conceptualise and implement their science diplomacy strategies. To date, the most advanced in this regard are the rich industrialized countries slowly followed by others, e.g., Central and Eastern European (CEE) countries like Poland. While science diplomacy of selected states is debated among practitioners and analysed empirically, these efforts do not include CEE countries. In this article we present the regulatory, institutional and operational frameworks of Polish science diplomacy. The opinions of SD stakeholders obtained in a series of interviews supplement the findings and give a wider perspective on the challenges Polish science diplomacy is facing. We argue that although a universal model of science diplomacy does not exist, states such as Poland may profit from the experience of more advanced systems. We also claim that Polish science diplomacy is currently significantly conditioned by the domestic political situation. This negatively impacts continuity and coordination in strategic programming and implementation of SD. The case of Poland is compared with two other countries—France and the Czech Republic.

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Introduction

The concept of science diplomacy (SD) in academic discourse is of relatively recent origin. The intensification of research, including attempts to define and classify practices that can be included in the SD category, date from the beginning of the 21st century. SD along with e.g. economic, digital or para-diplomacy, is a subcategory of the so-called new diplomacy, as opposed to the long-standing traditional diplomacy known to date (Barston, 2014; Sharp, 2016; Constantinou and Sharp, 2016; Bjola and Kornprobst, 2018).

The attempts to conceptualise SD are still ongoing. There exists neither a clear-cut definition of the term nor a consensus on SD's stakeholders, instruments and activities. SD as a discourse draws the attention of multiple social actors who present diverse interpretations of the concept. The debate is attended by researchers who treat SD as an empirical object and by actors who are or have been involved in SD practices in various ways. These are career diplomats, science counsellors/advisers, experts to national and international decision-making bodies, and politicians. They perceive SD through the lens of interests (national, group) and goals to be fulfilled. Therefore, the definition of SD is not based on analytical categories but draws its meaning from a compilation of different narratives, approaches and ideas of changing relations between science and politics, science and foreign policy and the evolution of diplomacy as an institution of IR (Turekian et al., 2015; Gluckman et al., 2017; Rungius, 2018).

Although SD is an issue that can be classified as part of a broader research problem, that is, a relationship between science and politics, expert knowledge and politics, knowledge and power, and S&T policy's international dimension, it has received only moderate attention from mainstream IR scholars (Wright, 1954, 1955; Tessmann and Vogel, 1981; Rosenau, 1990; Skolnikoff, 1993). Science, technology and innovation are treated as factors of change in IR and world politics influencing all dimensions (military and non-military) and actors of international relations (Ferguson and Mansbach, 2004; Nye, 2004; Rosenau, 2006; Kelly, 2014).

The study of SD is a subcategory of a larger field of enquiry which focuses on diplomacy. In the view of mainstream IR scholars, representing realist and neorealist schools of thought, diplomacy has been seen as a state practice (Watson, 1982), as a synonym for foreign policy or as its instrument (Morgenthau, 1954; Holsti, 1983), as a way of communication between states, and as a way of handling international affairs (George, 1991). The English school of international relations has theorized diplomacy as one of the institutions of international community (cosmopolitan agency) next to sovereignty, territory, governance by superpowers (Neumann, 2003; Buzan, 2004) or as a primary IR institution (Butterfield, 1966). The critical approaches to diplomacy call into question the mainstream IR theorists' deterministic assumptions about the nature of diplomacy. They question the cognitive value of claims about what diplomacy is, based on how the term is defined and used by people. Thus, creating a definition of diplomacy will always authoritatively impose a chosen perspective on this phenomenon, overlooking other approaches. Therefore, it is worthwhile to examine how people in different times and places understand diplomacy and its practices but also why certain perceptions prevail over the others (Der Derian, 1987; Constantinou, 1996; Neumann, 2005; Constantinou and Der Derian, 2010).

SD as a subcategory of new diplomacy provides confirmation of the changes in international relations paradigm and in the structure of world order, which consist of, inter alia, an increased importance of non-military factors and dimensions, in particular of technological or knowledge factors (Sofer, 2013). It is also an example how globalization impacts diplomacy in general, which

is manifested in the actors' scope of diplomacy being extended to non-state actors (Constantinou and Der Derian, 2010; Rana, 2011). The new diplomacy is proliferating on issue areas that, until quite recently, had been regarded as belonging to domestic policy, e.g., science, health, economics or culture (Sharp, 1999; Melissen, 2005; Bjola and Kornprobst, 2018). New entities take over basic diplomatic functions and, together with states, co-create the international diplomatic system (Hocking et al., 2012; Jönsson, 2016).

It should be noted that the evolution of the subjective aspect of diplomacy also occurred within the state and the functions in external policy traditionally claimed by the Ministry of Foreign Affairs and diplomatic and consular services, are performed by other departments, executive agencies, parliaments, non-governmental organizations representing a given social group or economic sector. With respect to SD, they can be performed by the departments of foreign affairs, science and higher education, by research funding agencies, organizations representing the research community, research institutes, universities and scientists themselves (Campbell, 2015).

Activities classified today as SD have a centuries-old tradition and are a permanent element of the activity of states in the international arena (Turekian et al., 2015). Still, there is no commonly recognized definition of SD, since the one proposed in the 2010 Royal Society/American Association for the Advancement of Science report (RS/AAAS, 2010) did not qualify as a heuristic framework allowing for conceptualization of the term but rather a classification of types of SD. It is possible to identify several meanings of the concept discussed by researchers and SD practitioners who focus on practices or discourses as the core components of the definition (Rungius, 2018).

The challenge is undoubtedly to set the boundaries of the definition in order to avoid the risk of blurring the concept and, as a result, applying it too freely to all activities that have an international dimension and concern research or are carried out with the participation of the scientific community. It should be assumed that SD combines two categories: scientific policy, or science and technology policy, and foreign policy (Leitjen, 2017, p. 20; Van Langenhove, 2017, p. 10).

In this context, some authors (among them many practitioners of SD) explicitly propose to understand the term as a process through which states represent themselves and their interests on the international arena in areas related to knowledge—its acquisition, use and communication—acquired through the use of scientific methods. This approach allows a clear distinction to be made between activities classified as SD (they relate to the objectives and interests of the state in question) and those that can be classified as international scientific cooperation, which in many cases takes place without the participation of states and can be profit-driven (Gluckman et al., 2017, p. 3; Turekian et al., 2015; Copeland, 2011).

In our opinion, the role of non-state actors who actively participate in SD cannot be denied. However, it should be assumed that we only deal with activities falling within the scope of SD if the state is one of the participants. In other words '(...) the central role of state actors (or representatives of a supranational public entity) is brought into definitions of SD in order to demarcate it from international scientific cooperation' (Rungius, 2018, pp. 5–6).

The objective of SD may be to establish and develop scientific cooperation, joint research activity aimed at solving specific problems, to promote the state, to enhance the state's image through science and/or to provide necessary expertise for the decision-making process. The same activities may also be an instrument for accomplishing the objectives of the state's foreign policy, as scientific cooperation may serve to achieve scientific

progress, or constitute neutral grounds for maintaining inter-state relations in a crisis. In both cases, the objectives of SD are of a mixed competitive and cooperative nature (Penca, 2018).

There are numerous studies analysing the models of SD of selected states, such as the USA, Great Britain, France, Germany, and Japan (Flink and Schreiterer, 2010; Ruffini, 2017; Ruffin and Schreiterer 2017). Central and Eastern European (CEE) countries are underrepresented in these analyses. Presumably this is due to the fact that interest in SD in the region has existed for only a few years. The formation of strategic foundations and institutional background is at a very early stage or is based on activities undertaken independently by the stakeholders of SD, e.g., bottom-up initiatives of scientific institutions. So far there have been just a few empirical studies concentrating on public policies, e.g., higher education policy in Poland and other CEE countries (Kwiek, 2012a, 2012b). Yet none of those have explicitly dealt with SD models but rather analysing the transformation of the higher education sector in the CEE region (Kwiek, 2012a, 2012b).

Methodology

When considering SD as a new dimension of diplomacy or an instrument for implementing the state's foreign scientific policy, the views of neoclassical realists should be recalled. Neoclassical realism is regarded as a concept of foreign policy analysis in which, in addition to external conditions originating from the international environment, the importance of internal conditions is emphasized. Intra-system forces are important for neoclassical realists as they impact and direct the conduct of the state externally. What is defined as 'national interest' is a product of groups or individuals governing the state at a given time (Taliaferro et al., 2009). This approach, together with the perspective adopted by neoliberal institutionalism, gives a full picture of the nature of the forces conditioning the state's foreign policy. In the opinion of neoliberal institutionalists, states are not unitary, and their foreign policy is also influenced by non-state actors (Keohane and Nye, 2001).

Analysing the category of state interests, neoclassical realists note that the manner in which the state acts is contingent on motivation. The behaviour of the state in external relations, i.e., its foreign policy, is conditioned by variables of an internal nature and above all, by cohesion and consensus within elites, social cohesion and the vulnerability of a government or regime to threats. The way the elites perceive the role and place of the state in the international system is key, since this is what the direction of foreign policy depends on. The complex of variables and internal political processes is a transmission belt that directs and shapes the decision-making process and political decision in response to external influence. This explains why states' responses to similar impact factors differ. One way in which states respond is bandwagoning with other countries, usually with higher potential. Such bandwagoning behaviour is typical of states with revisionist attitudes, those that seek change. The need for change may relate to both the state's own position in the international system as well as the drive to establish a new order through changing the position of the hegemon (Schweller, 2004).

Applying this method of interpretation, it may be assumed that the essence of Poland's SD is to join entities—countries, international organizations—with a greater potential and ranked higher in the area of scientific and technical progress, greater internationalization of scientific research, or more experienced in using science to meet the objectives of other policies. Therefore, Poland falls into the category of states seeking revision, change in its own position in terms of scientific and innovation policy as well as participation in international scientific and research

cooperation. This is confirmed by a declarative aspect of state policy. However, the actual form of its activities is a result of internal variables, such as the absence of consensus between political and social elites with respect to the definition of objectives of Poland's foreign scientific policy, instrumentalization of SD and making it a tool for achieving the objectives of internal policy.

The bandwagoning strategy, which aims, inter alia, to improve a state's position in the international community, is applied by CEE countries. This is also visible in the science, technology and innovation policy issues in their foreign policy agendas. Do not mistakenly assume that countries such as Poland or the Czech Republic, which have a common experience of communism, political and economic transformation, and the pursuit of integration into the European Union, will have similar models of SD. Moreover, one can expect that the simplest strategy for CEE countries will be to copy best practices of the more advanced countries. Withal there is no optimized model of SD, just as their foreign and science policy interests differ, the management and financing systems of science are diverse, and the potential of the scientific community is not equal either. Furthermore, the perception of interests, goals, and instruments of SD among domestic stakeholders also shapes the state's model of SD.

The objectives of Poland's SD will be classified on the basis of a division developed by T. Flink and U. Schreiterer. From the state's perspective, the objectives of SD can be divided into three categories. First, it is access to scientists, to research results, the ability to use research infrastructure and access to natural and financial resources. It can be used to improve innovation potential and competitiveness. Second, the objective is to promote the state as a venue for conducting research, as a partner in potential research projects and to promote scientific and technological achievements to date. The third objective is to influence public opinion, decision-makers or economic and social leaders of another state (Flink and Schreiterer, 2010). Reducing this division to the access-cooperation-influence triad, it can be assumed that the objectives of Polish SD are centred around two categories: access and cooperation. This is compatible with assigning Poland to a group of revisionist states whose behaviour is dominated by the pursuit of change by joining entities with a greater potential and benefiting therefrom.

In this article, we want to delineate how Poland pursues its regulatory and institutional frameworks of SD. To get a better understanding of the characteristic features of Polish SD we analysed regulatory, institutional and operational frameworks of Polish SD, examining its priorities and goals, the stakeholders involved as well as its instruments and activities. To show the Polish case in a wider perspective, we refer to the specific solutions introduced in the Czech Republic and France as representatives of the EU-13 and EU-14.

The data we gathered come from source documents analysis, such as normative acts, conceptual documents, expert analyses, political documents. A key complement thereof is information obtained from individual semi-structured interviews conducted with representatives of the Ministry of Science and Higher Education (pl. Ministerstwo Nauki i Szkolnictwa Wyższego, MNiSZ), diplomats, high-level officials of executive agencies [the National Agency for Academic Exchange (pl. Narodowa Agencja Wymiany Akademickiej, NAWA), the National Science Centre (pl. Narodowe Centrum Nauki, NCN), the National Centre for Research and Development (pl. Narodowe Centrum Badań i Rozwoju, NCBiR)], the Polish Academy of Sciences (pl. Polska Akademia Nauk, PAN), including employees of the Polish Science Contact Agency PolSCA in Brussels, the PAN research station in Paris and scientists who participate in international research cooperation¹.

The origin of Polish SD

Interest in SD in Poland is relatively recent. It can be assumed that on both an analytical level, as well as on a political level SD has been a subject of debate for approximately 5 years. The first ministerial documents in which the term was used date back to 2015. Clearly, the activities that fall within the scope of SD have a longer history but they were not so defined and formed part of cultural or public diplomacy (Ministerstwo Spraw Zagranicznych, 2019c). Similarly in the Czech Republic and France, SD originated from cultural diplomacy. The regulatory and institutional frameworks of Czech SD are in their inception phase and date back to 2018–2019 (MZV, 2020) whereas the origins of French SD can be found in 1955, when the first scientific counsellors were nominated and the 1970s when a strategic framework was established (Lane, 2013).

One should not disregard historical conditions and events, such as Poland's regaining independence in 1918, the experience of World War II, the period of the Polish People's Republic and the communist system, post-1989 political and socio-economic changes as well as the process of Poland's application and accession to the North Atlantic Pact and the European Union.

The transformations that took place after 1989 were of an internal and external nature. The political and socio-economic system of Poland changed. As a result, Polish democratic authorities prioritized the presence in and integration with the cooperative structures of the Western world. Poland wished to be a reliable and trustworthy partner for the countries in the Western Hemisphere (Ociepka, 2013).

Systemic changes in Poland resulted in the intensification of scientific cooperation with foreign countries. Most of them were bottom-up initiatives undertaken by the scientific community. There were obviously many problems, including an intense brain drain which began in the post-war period, non-compliance with Western standards of practicing science, or an absence of modern research infrastructure. The consequences of years of isolation continue to persist, since Polish science is still uncompetitive compared to Western European countries or the USA (Umińska-Woroniczka, 2013).

In the 1990s, activities related to promoting and internationalizing Polish science were part of cultural diplomacy and fell under the purview of the Ministry of Foreign Affairs. Some tasks were assigned to the Scientific Research Committee, the Polish Academy of Sciences, the Foundation for Polish Science established in 1991, or the Conference of Rectors of Academic Schools in Poland (Umińska-Woroniczka, 2013).

At that time, there was no coordinated inter-ministerial policy aimed at promoting Poland and building its positive image abroad, also using science, in place. The activities undertaken, however, were of a limited subjective nature, often reaching the local Polish community while they should be addressed to foreigners. Insufficient funds were also a challenge, which confirms the fact that it was still more important for the authorities in Warsaw to promote Poland as a reliable economic partner (Umińska-Woroniczka, 2013).

The regulatory framework of Poland's SD

Recalling the division of the objectives of SD proposed by Flink and Schreiterer (2010) and placing them within the access/accessibility-cooperation-influence triad, it can be concluded that gaining access to broadly construed resources of countries with a higher level of scientific and technological development has been and continues to be Poland's priority in this area. It concerns access to research infrastructure, external funds for financing science, knowledge and human resources. Other objectives fall under the category of "cooperation", since both the Polish

government and all other entities strive to increase the presence of Polish scientists in international expert bodies or international research teams. It is intended to, among other things, improve the results of absorption of external (foreign) financial resources for execution of research grants but also to increase international publication rates.² The third category³, i.e. influence, finds the weakest confirmation in the objectives and activities of Poland's SD. This assumption will be verified by analysing the documents in force, examples of activities falling under the scope of SD and information obtained as a result of the conducted interviews.

The Polish Foreign Policy Strategy 2017–2021 is the most important strategic document that defines the objectives and directions of Poland's activity in the international arena (Ministerstwo Spraw Zagranicznych, 2017b). Also taken into account are the government programme of cooperation with the Polish diaspora and Poles abroad in 2015–2020 (Ministerstwo Spraw Zagranicznych, 2015), government administration tasks for 2017–2018 as part of the Government programme of cooperation with the Polish diaspora and Poles abroad 2015–2020 (Ministerstwo Spraw Zagranicznych, 2017c), Poland as a Brand—a concept (Międzyresortowy Zespół do spraw Promocji Polski za granicą, 2018), and Directions for the promotion of Poland 2017–27 (Ministerstwo Spraw Zagranicznych, 2017a).

As stated above, Poland has no separate SD strategy provided for in a legally or politically binding act. This does not mean, however, that this issue is ignored by the government administration. The most important strategic document, from the point of view of implementing the state's foreign policy, emphasizes the necessity to create effective SD and to utilize scientific research in building international relations. In this context, science is treated as an instrument of foreign policy, which is to be a building block of a positive image of Poland throughout the world. Attention should also be paid to the future form which shows that the authors of the document are aware that Poland does not conduct coordinated SD. It transpires from the information obtained from the officials of the Ministry of Science and Higher Education that the Inter-ministerial Team for the Promotion of Poland Abroad was working on a conceptual document outlining the assumptions of SD of Poland. A draft strategy was prepared by one of the task teams (Task team for scientific, educational and linguistic promotion). However, that document was not acted on and the Inter-ministerial Team itself was disbanded (Ministerstwo Spraw Zagranicznych, 2019e).

In both France and the Czech Republic, science and innovation-supporting actions are viewed as instruments of foreign policy. International scientific collaboration is an enabler for improving relations with key partners, thus strengthening global governance (Kaiser, 2019). Of these three countries, only France has a strategy for SD in the form of a separate document developed by the Ministry for Europe and Foreign Affairs in 2013 (Ministre des affaires étrangères, 2013). Similar to Poland and the Czech Republic, a special body has been established to coordinate dialogue between SD stakeholders (MZV, 2020).

Access/accessibility. The aforementioned documents contain numerous examples confirming that the objectives of Polish SD focus on access to scientific resources of more advanced foreign partners. Therefore, the tasks of the Foreign Policy Strategy include "measures to promote instruments supporting the development of modern technologies and innovation by Polish entities, including the *Horizon 2020* programme" (Ministerstwo Spraw Zagranicznych, 2017b). This goal is also prioritized in strategies of France and the Czech Republic but there are also some differences. French SD is interconnected with development cooperation which gives priority to the countries of the South,

especially former French colonies (Le ministère de l'Europe et des Affaires étrangères, 2018), whereas Czechs are inspired by small countries that are world-class in innovative economies for instance, Finland, Sweden, Switzerland, Israel and Taiwan (Council for Research Development and Innovation, 2019).

The government programme of cooperation with the Polish diaspora and Poles abroad mentions balancing brain drain with brain gain through cooperation and dialogue with the Polish diaspora and Poles abroad. The Polish government will encourage scientists of Polish origin to transfer their scientific activity to Poland (Ministerstwo Spraw Zagranicznych, 2015, 2017c)⁴. We find the same priority in the French SD strategy where we read that the government is seeking to encourage French researchers to return to France (Ministre des affaires étrangères, 2013).

Cooperation. Creating favourable conditions for scientific cooperation, supporting the scientific community in establishing international relations or increasing the number of Polish scientists in international scientific projects is yet another of the major priorities specified in the source documents. Building international networks and developing cooperation is also a condition for achieving the objectives falling under the previous category. Activities to incorporate scientific cooperation into international dialogue or, indirectly, the goal of presenting Poland as a country of scientific excellence with qualified scientific staff, modern research and teaching infrastructure (Ministerstwo Spraw Zagranicznych, 2017b) may be identified as objectives of the Foreign Policy Strategy. It is all intended to present Poland as a reliable partner for scientific cooperation. France and the Czech Republic also identified this objective in their strategies. A positive perception of the state is perceived as a prerequisite and a decisive factor for the internationalization of French science. The Czechs' priority is to become an innovation leader by the end of the next decade. This is achievable if Czech scientists engage in collaboration with the best scientists and facilities throughout the world (Ministre des affaires étrangères, 2013; Kaiser, 2019).

Similar objectives were set forth in the 2017–2018 government programme of cooperation with the Polish diaspora and Poles. It discusses “supporting initiatives involving cooperation between Polish and foreign scientific communities”, which is to result in “strengthening professional contacts”. (Ministerstwo Spraw Zagranicznych, 2017c, p. 18).

The authors of the document ‘Poland as a Brand—a concept’ list science as one of five priority areas, especially in the initial phase of building Poland as a brand. The ambassadors of the brand include, among others, renowned scientists who are to showcase Polish science but also to encourage foreign scientists to undertake joint scientific and research initiatives with Polish researchers (Międzyresortowy Zespół ds. Promocji Polski za Granicą, 2018, p. 29).

The most detailed overview of objectives, instruments and anticipated effects is contained in the document entitled ‘Directions for the promotion of Poland 2017–2027’, which was to be implemented by the recently disbanded Inter-ministerial Team for the Promotion of Poland Abroad. It was assumed that Poland would become one of the leaders of growth with respect to the internationalization of science in Europe. In addition to these objectives, the document defines target groups, milestones such as significant achievements of Polish scientists in the international arena, particularly international awards granted, measures, tactics and instruments. The document was addressed to the ministries and their subordinate units that work to promote Poland abroad. It is also proposed that other entities, e.g. local government units, the private sector or non-governmental organizations, join the

activity (Ministerstwo Spraw Zagranicznych, 2017a, p. 5, 16, 17, 29).

Interviewees also draw attention to the role of science as an instrument for establishing and maintaining relations with other countries and their societies. They emphasized the relationship between SD and public diplomacy. Activities that are part of science for diplomacy are not, however, a priority for the Ministry of Science and Higher Education, which is Poland's participation in international bilateral and multilateral scientific cooperation. Poland is to focus on developing those disciplines that maximize its chances of becoming internationally recognized. Government administration must make efforts to increase the impact of science and expertise in the process of deciding on the directions and shape of the state's foreign policy. The Ministry of Science, aided by the Ministry of Foreign Affairs, must continue to work to expand the network of Poland's foreign partners. Another task is to apply for access to new international organizations of a scientific nature, using scientific contacts to build regional cooperation, primarily with the Visegrad Group countries and the countries of the Baltic Sea region (Interview: MNiSW, 2019).

The objectives of the Ministry of Science and Higher Education also include scientific cooperation with the Polish diaspora and Poles abroad and the use of science to promote Poland, in order to attract foreign scientists and encourage them to conduct joint research with Polish researchers. The Ministry will also be active in creating favourable conditions for establishing cooperation between Polish and foreign research institutions, universities, partners in the socio-economic environment that allow Poland to take part in international efforts towards meeting global challenges, e.g. climate change (Interview: MNiSW, 2019). The French Ministry of Higher Education, Research and Innovation also prioritizes the internationalisation of French science but with the condition that the cooperation projects meet the highest standards of scientific excellence. All three countries will work to increase their performance in EU-funded projects and intensify cooperation with partners in Asia (Taiwan, Japan, South Korea, China). France wants to establish scientific collaboration with the BRIC countries. Israel is a priority research and innovation contact for the Czechs (Ministère de l'Enseignement supérieur, de la Recherche et de l'Innovation, 2019; Kaiser, 2019).

Similarly, the objectives of SD falling into the category of cooperation constitute an important area of activity for representatives of the Ministry of Foreign Affairs. Another area of diplomats' activity is promoting the state with the aid of science as an instrument (Interview: Embassy of Poland in France, 2019).

Influence. The objectives of SD that may be included in the category of influence have not been directly defined and provided for in the strategic documents. It can be concluded, however, that the Polish foreign policy priorities related to development aid and cooperation with the Eastern Partnership countries indirectly use scientific cooperation as a policy instrument. Making efforts to ensure Poland's broadest possible representation in international science organizations and in those, in which the decision-making process requires expertise is an objective centred around increasing Polish significance and influence. It concerns, for example, the bodies of the European Union, as emphasized by one of the interviewees who asserts that the scale of Member States impact is demonstrated by its ability to create networks and coalitions, since the decision-making process in the EU is deeply rooted in consultations, and the goal of each state is to have the largest possible group of its own representatives in consultative and advisory bodies, which impacts the state's voting power in the

European decision-making process (Interview: Polish Science Contact Agency PolSCA, 2019).

The National Agency for Academic Exchange offers programmes that are not based on criteria strictly related to the quality of scientific research and the pursuit of scientific excellence. They are intended to financially support the Polish diaspora opting to study in Poland. Such objectives are also pursued by the development policy, i.e. programmes financed by the Ministry of Foreign Affairs and addressed to the Eastern Partnership countries and Central Asia (Interview: NAWA, 2019). Certainly these endeavours are not comparable to the efforts taken in France, where the objectives labelled as influence make a large part of the country's SD. Here France's intellectual achievements and scientific and educational mobility are intended to testify to a deeply rooted concept of greatness (*la grandeur*) of France, as General Charles de Gaulle stated 'France cannot be France without its greatness' (Rieker, 2017, p. 2).

With respect Poland SD may be an instrument to influence others. However, this is not a priority, since—at this stage of development—SD stakeholders must focus on expanding cooperation and building networks within the international scientific community and search for good practices in research and STI governance. Poland has to lobby to increase the number of Polish experts on the management boards of the European Commission (Interview: PAN, 2019). Science being used as foreign policy tool of influence is usually far from research standards and scientific excellence (Interview: NCN, 2019). Similarly for the Czech Republic as a smaller country, SD is viewed as potentially a very effective reservoir of tools in asserting their position and interests on a regional and global level rather than as an instrument of influence (Kaiser, 2019).

Institutional and operational frameworks of Poland's SD

The institutional structure of Poland's SD, i.e. the entities that initiate and carry out activities in the field of SD, can be divided into two categories: top-down and bottom-up actors. The first group includes state administration institutions that define and establish a strategic and legal framework for SD and implement it. They are legally or politically mandated to act. The other group includes all other entities that do not act on direct instructions of the state administration, although they often cooperate with it. They are not mandated to act on behalf of the state but on their own. In many cases, they enjoy extensive autonomy and their activities are motivated by the drive to achieve their own objectives and priorities, e.g., seeking foreign partners for a joint scientific projects. The first category of entities includes the Ministry of Science and Higher Education and the Ministry of Foreign Affairs. Depending on the objectives and nature of activities, those two ministries mutually play a coordinating and supporting role in implementing SD. The Ministry of Entrepreneurship and Technology also participates, albeit to a limited extent.

Other institutions are executive agencies: the National Science Centre, the National Centre for Research and Development and the National Agency for Academic Exchange. Supervision over the agencies is exercised by the Ministry of Science. The same ministry delegates tasks to the National Contact Point for Research Programmes of the European Union (pl. Krajowy Punkt Kontaktowy, KPK), which forms a Network of Contact Points with 11 Regional Contact Points (KPK, 2019).

The Inter-ministerial Team for the Promotion of Poland Abroad, established on March 2016, was also a part of the first group. That structure was disbanded (Ministerstwo Spraw Zagranicznych, 2019e). The team was supported by task teams formed under its own decision (July 2016). The ten teams also

included a Task Team for scientific, educational and linguistic promotion, spearheaded by the Ministry of Science and Higher Education. One of the last decisions of the Task Team was to adopt the document 'Poland as a Brand—a concept' on 27 February 2018. The team was dissolved, as the author was informed by an official of the Ministry of Science and Higher Education. It is unclear whether a new structure will be created in its place. Therefore, it is not certain whether the said strategic documents are still in force, and especially whether they are implemented. In all likelihood, those ministerial policy measures have been resumed. According to the official of the Ministry of Science and Higher Education, discontinuing the work of the Team was justified, since the activities undertaken were entirely ineffective, especially from the point of view of the Ministry's objectives related to the internationalization of Polish science (Interview: MNiSW, 2019).

The Ministry of Foreign Affairs performs a coordinating role primarily in the field of science for diplomacy. Clearly, scientific activities and science disciplines are being carefully selected, which—in the ministry's opinion—will best contribute to forging the expected image of Poland abroad. Within the structure of the ministry there is no separate unit dedicated to SD. It lies within the competence of the Department of Public and Cultural Diplomacy. Since 2017, the Minister of Foreign Affairs has been supported by a science and technology advisor prof. Marek Konarzewski (NAWA, 2019). The structure of some diplomatic missions includes science advisors, e.g. there exists a position of an expert on science, technology and higher education at the Polish embassy in Washington (Ministerstwo Spraw Zagranicznych, 2019b). At the Polish embassy in Tokyo, those issues are dealt with by the Second Secretary (economics, scientific and technical cooperation) (Ministerstwo Spraw Zagranicznych, 2019a). In the coming months, six scientific attaché offices will be established in locations most relevant from the point of view of SD objectives⁵.

The SD corps of the Czech Republic as well as France are much more advanced. The Czech MFA is supported by a Special Envoy for SD. This position was established in 2019. Moreover, the Czechs deployed science attachés in Brussels, Washington, Tel Aviv and Taipei (MZV, 2020). France is definitely a leader in this regard. Despite recent general budgetary cuts for state administration the STI network abroad is comprised of 5 scientific counsellors, 71 attachés, and 70 junior officers. They are deployed to 62 countries. The largest representations are in the United States (20), China (15) and the EU (38). It is worth adding that the majority of French SD staff have scientific backgrounds whereas the Czech Republic is recruiting career diplomats for the positions of science attachés. Since 2010 France has had an Ambassador delegate for science, technology and innovation who is promoting French science internationally (Interviews: Ministère de l'Enseignement supérieur, de la Recherche et de l'Innovation; SciencesPo Paris, 2019).

At the Ministry of Science and Higher Education, the Department of International Cooperation as well as the Department of Innovation and Development and the Department of Science are responsible for SD. The ministry is aided by three executive agencies. The Polish National Agency for Academic Exchange (NAWA) carries out tasks in the field of internationalization of higher education and science and is cooperating with Polish diplomatic and consular missions in this respect (Ministry of Science and Higher Education, 2018b; NAWA, 2018). The National Science Centre is an executive agency established to support scientific activities in the field of basic research (Ministry of Science and Higher Education, 2018a). The National Centre for Research and Development is the third agency that financially supports all research initiatives of an

applied nature (Ministry of Science and Higher Education, 2017; Narodowe Centrum Badań i Rozwoju, 2019). In the Czech Republic, there are also two agencies responsible for financing basic and applied research. Although there are no separate agency specializing in nation branding with the use of science (like NAWA in Poland), Czechs are filling this gap with the Inter-Excellence programme, which is dedicated to international RDI cooperation. The programme includes international bilateral projects in basic and applied research (Inter-Action), multilateral projects in basic (Inter-Cost) and applied research (Inter-Eureka), Czech researchers in international excellence R&D teams in fundamental research (Inter-Transfer), Czech researchers in governing bodies of R&D NGOs (Inter-Vector), and support for RDI information networks and services (Inter-Inform) (Inter-view: MEYS, 2020).

The French system is much more complex in this regard. The National Research Agency, supervised by the Ministry of Research, is the research grants provider. In 2010 L'Institut français, Campus France, and Expertise France were created. These agencies are active in science, cultural and development diplomacy. Additionally, a network of 98 French institutes, 27 research institutes located in 34 countries, 160 archaeological missions, 236 Campus France offices in 120 countries, 363 branches of Alliances françaises complements the system (Les opérateurs sous la tutelle du ministère, 2019).

Another category of entities includes the Polish Academy of Sciences, the Foundation for Polish Science and other non-governmental organizations operating in the science and higher education sector; these include public and private scientific units and scientists themselves, acting individually or in teams.

The Polish Academy of Sciences is an active actor of Polish SD and undertakes activities in each of the three types of SD, although diplomacy for science is a priority (Interview: PAN 2019). International activity is carried out by foreign scientific stations in Paris, Rome, Vienna, a representative office in Kiev, the Historical Research Centre in Berlin, and the Polish Science Contact Agency PolSCA in Brussels. In 2017 the Polish Institute of Advanced Studies (PIASt) was established to promote Poland as a venue to conduct research in the field of humanities and social sciences (PIASt, 2019).

As emphasized by the respondents, the internationalization of Polish science is in majority based on bottom-up initiatives. In their opinion, this course of action is also the most effective one, as it results from personal contacts of scientists, themselves. The same applies to scientific units that enjoy autonomy in selecting partners and topics of scientific cooperation. Such discretion is of course limited by the general provisions of the Act on higher education and science, economic goals and priorities, e.g. national smart specializations, as well as funding options offered at any given time by research funding agencies (NAWA, NCN, NCBiR).

Discussions

SD of Poland is an aggregate of historical experience and current internal conditions as well as regional and global challenges. State institutions are responding to the global trend of increased interest in—both in terms of science and political practice—a new form of diplomacy. This primarily refers to the conceptual dimension, i.e. an attempt to incorporate a new concept, its definitions in official political documents and normative acts. Concurrently, a historical analysis provides confirmation that the relationship between science/science policy and foreign policy is longstanding. Scientific cooperation was an important and often used instrument of Poland's foreign policy but also of other sectoral policies, e.g. economic policy. Among the objectives of Poland's foreign scientific policy, priority is given to improving

the standing of Polish science in the international scientific and research domain, increasing the degree of internationalization of Polish science and striving for a more extensive presence of Polish scientists in international expert bodies.

All respondents agree that science has been and continues to be an important factor of internal and international policy. Therefore, that factor should be taken into account, preferably using anticipatory adaptation, in state policymaking. Striving for and supporting scientific and technological progress is in the interest of the state, as it is one of the determinants of power in the modern world. At the same time, the potential of domestic science should be treated as one of the instruments for achieving the objectives of other, e.g. economic or foreign policies.

Poland and Polish science have undoubtedly come a long way since the fall of communism in 1989 through system transformation and entry into the most important integration structures from a geopolitical point of view. However, the ranking of Polish science continues to be low compared to other OECD countries. Polish science is not sufficiently internationalized and does not provide the economy with innovation. Investment in science and higher education is lower in comparison to economies that have been able to build a strong and dynamically developing science and technology sectors (Brandt, 2018).

This explains why the objectives of Poland's SD focus on cooperation with more experienced partners, building a network of contacts and joining existing research networks, and seeking access to external funding for science, research infrastructure and human resources. As the respondents put it, internationalizing Polish science should be a priority, because only in this way can it learn from more advanced countries. It not only concerns the quality of scientific research, as in some disciplines Polish scientists match the expertise and achievements of researchers from other parts of the world. This is the case in disciplines such as mathematics, physics or biotechnology. What is also important are good organizational practices or legal solutions that are worth transferring and adapting to the needs of Polish science and the new technologies sector. In the opinion of the respondents, such cooperation is in place and efforts continue to be made to intensify it. They are made by individual institutions of the science and higher education sector as part of their statutory tasks. That is why representatives of, e.g. the Polish Academy of Sciences, are sceptical about the concept of devising a separate strategy of SD. Multiplying legal regulations or creating more administrative structures will not produce the expected result. It is even argued that Poland cannot afford SD because it is a country still working its way up. Such an opinion may stem from the fact that among the respondents, SD is often very narrowly construed as a practice pursued only by professional diplomats (Interviews: NAWA; 2019; PAN, 2019; NCN, 2019).

Polish SD is at a very early stage of development. Its assumptions and implementation methods are still in the conceptualization phase, although it cannot be argued that no measures have been undertaken. The objectives and instruments of SD have been declaratively defined. The challenges faced by the Polish science and higher education sector have been duly identified. However, the challenge and the unknown is the actual dimension of Poland's SD, as many of the planned activities have not been undertaken. Currently, the SD of Poland is rather an aggregate of numerous activities undertaken by various entities, often outside top-down strategic coordination. An important step was to incorporate the concept itself into Poland's foreign policy strategy. Unfortunately, disbanding the Inter-ministerial Team for the Promotion of Poland, which was to coordinate many activities in line with SD, further compounds the issue.

A certain transition phase, at least in terms of strategic activities that results from the reform of science and higher education

carried out in the last 2 years, may also be observed. A 20 July 2018 amendment to the Act on higher education and science introduced many changes that were extensively discussed and contested by the scientific community. The process of change is still continuing. That is why the respondents point out that in order to pursue coordinated SD, it is first necessary to determine our needs. That document, i.e. the Directions of the State's Scientific Policy Development, is still under development and will be ready in 2020 (Interviews: MNiSW, 2019; PAN, 2019; NCN, 2019).

The policy of the current government and the perception of Poland abroad is a source of challenges for SD, including for bottom-up activities that currently constitute the vast majority of activity in this area. It is clear that the Ministry of Foreign Affairs prioritize a history-based policy (Ministerstwo Spraw Zagranicznych, 2016, 2019f)⁶, promoting Poland but through activities mainly addressed to the Polish diaspora and Poles abroad (Ministerstwo Spraw Zagranicznych, 2019d, 2019g). The issues pertaining to foreign scientific policy are part of the so-called low politics, the achievements of which may quickly be lost. In the overall structure of the Law and Justice government in 2015–2019, the Ministry of Foreign Affairs was gradually marginalized and its activities were subordinated to current internal policy objectives. There was also a clear lack of coherence between the ruling and scientific elites, as dialogue between them was limited. As a result, the previously defined objectives of foreign scientific policy and its instrument in the form of SD have been discontinued (Dąbrowska, 2019).

Nevertheless SD continues to be pursued in the form of bottom-up activities. The efforts of the Ministry of Science and Higher Education and research funding agencies (NCN, NAWA, NCBiR) are also significant. One should hope that the inter-ministerial coordination formula will be restored, with a greater role and participation of the Ministry of Foreign Affairs. However, at this stage the objectives of Poland's SD, which fall primarily into the category of access and cooperation, can be effectively achieved by the entities operating under the supervision of the Ministry of Science, provided that sufficiently larger funds to accomplish them are secured. Also, they may not be treated as instruments for achieving myopic objectives of the government's internal policy.

The Polish SD when compared to other European countries (here the Czech Republic and France) is neither fully distinctive nor isomorphic. It shares SD objectives with its Czech neighbours. Both countries emphasize the need to overcome a development gap in science, technology and innovation through access to advanced research infrastructure and international scientific collaboration with world-class scientists. At the same time, in both countries the priorities to exert influence with the use of science as a tool are almost non-existent. Despite many similarities these two models also differ. The Czech SD is strongly linked with the objectives of economic diplomacy whereas in Poland, especially in recent years, historic diplomacy prevails. Undoubtedly there is no universal SD model that fits all. Nevertheless there are also similarities, for instance, scientific advisors to the government or MFA, scientific attachés, governmental agencies created to promote Polish science abroad (NAWA is a copy of the French Campus France).

Data availability

The datasets generated and analysed during the current study are not publicly available due the fact that they constitute and excerpt of research in progress but are available from the corresponding author on reasonable request. It has to be stated that at this stage of research the transcribed interviews are available in Polish.

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Notes

- 1 It should be noted that the results of qualitative research presented herein constitute an excerpt of research in progress, the purpose of which is a comparison of models of SD of selected EU countries (Germany, France, Poland, the Czech Republic).
- 2 The share of Polish scientific institutions and research teams in projects financed from the EU framework programmes is growing, but is still much lower than in the EU-15. For example, the Polish participation rate in H2020 applications is 11,468, comparing to British 71,241, German 68,090, an Italian 67,414. Among the EU-13 Member States, we are the leader in this area. However, this is not a complete picture of the country's success in H2020. Looking at the success rate of project financing, the first place among the EU-13 is occupied by Cyprus (12.29%), followed by the Czech Republic (12.23%), and the result for Poland is 9.91% (KPK, 2018).
- 3 Poland is ranked as a moderate innovator. In the period 2011–2018 Polish performance has increased relative to that of the EU in 2011. The normalized performance of Poland in 2018 relative to that of the EU in 2018 shows that above 120% were the indicators concerning the innovation-friendly environment (especially the broadband penetration: 2011–77.8%, 2018–233.3%). There is also a high score on population with tertiary education (2011–140.3%, 2018–147.0%). The indicators directly related to science sector: new doctorate graduates (2011–23.1%, 2018–26.5%), international scientific co-publications (2011–23.7%, 2018–47.0%), most cited publications (2011–19.0%, 2018–46.1%), foreign doctorate students (2011–10.1%, 2018–8.3%), PCT patent applications (2011–11.8%, 2018–13.4%) (European Commission, 2019).
- 4 At this very moment, data showing the effects of programmes addressed to Polish scientists or those of Polish origin who decided to conduct their research in Poland or return to Poland permanently are not yet available. Projects in this area are the responsibility of the new executive agency NAWA, which was established in 2017.
- 5 To date, there is no official information on this subject. Insight in this regard was obtained from interviews conducted in May and June 2019, among others, at the Polish Academy of Sciences or the National Agency for Academic Exchange.
- 6 This is confirmed by the establishment of the Council for Historical Diplomacy in 2016 (Ministerstwo Spraw Zagranicznych, 2016), the implementation of numerous activities aimed at promoting knowledge about Polish history abroad.

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Competing interests

The author declares no competing interests.

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