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The Geography of Research Funding: Semantics and Beyond

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Abstract

The research on cross-national research cooperation, including the categories of Global South/North, tends to leave out the issue of research funding. However, research funders are no neutral infrastructure by and for the scientific community, but represent societal, political, or economic stakeholders, whose expectations shape funding policy goals and practices. In consequence, funders need to be integrated as intermediary organization when discussing the ideology and effects of geographic pairing. In our article, we develop and sustain the proposition that an analysis of funders' views is imperative to understand the ways international research collaborations of unequally equipped participants are perceived, maintained, and sometimes reframed over time. Building on interview data and policy documents from six countries, we analyze the semantics employed to make sense of North–South relationships. We find that narratives from development cooperation complement and sometimes supersede the traditionally liberal meta-narrative of scientific collaborations.

Keywords

research funding, North–South collaborations, science policy, Africa, development policy

Introduction: The Slowly Shifting Geography of Science

The end of the East–West conflict was a historic turning point in the political organization of the world. In the aftermath, globalization picked up speed, and with it hopes emerged for a multipolar world that could also lead to the disappearance of the

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center-periphery divide between nations. These hopes also extended to the sphere of science.

However, these ideas and policy programs have not (yet) come true. Science is more slow-moving than some observers had expected and hoped. It is a well-known fact that access to *higher education* (HE) worldwide is improving and enrollment rates have increased almost everywhere (Schofer & Meyer, 2005), yet there is no equally exponential development in the global *production of scientific knowledge*. Both aspects—HE and research—are strongly intertwined, yet in our article we primarily investigate the latter. While there is evidence that connectivity within the global science system is increasing, most research collaborations still take place within a small circle of countries (Engels & Ruschenburg, 2008; Maisonnobe et al., 2017; Wagner et al., 2015). Observers are skeptical that the overall increase in scientific collaboration has led to a spatial redistribution of scientific capacities and opportunities: “the global geography of science has not changed substantially” (Olechnicka et al., 2019, p. 176). The vertical center-periphery structure in science persists and continues to reflect the global economic structure (Olechnicka et al., 2019, pp. 102–105).

What holds true for the geography of science is also true for the closely linked geography of research funding. Public and private funders have considerable influence over the design of research programs. Funding is hence not a neutral factor, but follows the interests, ideas, and beliefs of funding organizations and their political principals. A vivid illustration for this link between society and research funding is the role of the latter in the Cold War when science (e.g., in the fields of aerospace research or particle physics) was meant to contribute to the nations’ prestige. Research funding was the instrument to incentivize research on certain topics and in important fields (Hollingsworth & Gear, 2013). The orientation of research funding toward non-scientific criteria is particularly important when one considers the sums at stake.

Basic economic indicators illustrate today’s uneven research funding landscape and reflect the available capital for funding agencies. The immense differences between countries can be described by economic indicators and investments in research and development (R&D) for two heuristic reasons. First, the GDP of the OECD group grew from 45.45 trillion in 2011 to 50.84 trillion in 2017 (constant 2010 USD). At the same time, the African¹ countries’ GDP grew from 38.66 billion in 2011 to 48.38 billion USD in 2017.² Major sources of this mean value are the national economies of South Africa, Nigeria, Egypt, and Algeria, contributing together nearly 30% in 2011. Second, these disparities become relevant for R&D when taking into account the often consulted indicator of a country’s gross domestic expenditure on R&D (GERD). One way to look at this expenditure is to focus on its share of the overall GDP. OECD countries spent a mean 1.89% of their GDP for R&D in 2011 and again in 2016.³ In the meanwhile, all African countries increased their overall mean expenditure for R&D from 0.45% of GDP in 2011 to 0.51% in 2016.⁴ The conclusion needs to be drawn that the low investment in GERD remains critical, with the exception of states such as South Africa and Tunisia (>0.7%) as well as Egypt (>0.5%) in 2011. The heuristic value of the indicators is hence to show that not only are the relative

investments in R&D lower but also the absolute investment given the disparities between the absolute GDP of both groups.

The Role of Research Funding With Regard to Africa

It does not surprise that the funding by foreign sources has a significant impact for the sustenance and evolution of scientific activities in African countries. In the period between 2014 and 2018, the German Ministry for Education and Research alone invested €450 million for projects in collaboration with African states.⁵ Similarly, the British Newton Fund since 2014 has diverted funding earmarked for official development aid (ODA) into science and technology (S&T)-related collaborations with 18 countries so far, of them three situated in Africa. Its 7-year budget comprises of £735 million (Grimes & McNulty, 2016). The role of European organizations in the financing of North–South⁶ collaborations, thus, cannot be underestimated. In their case studies of Science Granting Councils in Sub-Saharan Africa, Chataway and colleagues (2017, p. 10) conclude with regard to international funders that “there is now a complicated landscape of actors and initiatives so we are unable to describe them all”

These figures also signal that the research and funding policy pursued in countries, such as the United Kingdom or Germany, has a direct influence on scientific work in African countries. Earlier studies already suggested that the funding party is often—intentionally or unintentionally—determining the topics of research considered appropriate and necessary (e.g., Crane, 1977; Gaillard, 1991). Funding agencies have more recently been engaged in discussions about how to set the research agendas and evaluation criteria that mostly benefit the demands of scientists one supports through international funding (e.g., Bradley, 2008; Lebel & McLean, 2018; Zingerli, 2010).

Yet, a geography of research funding agencies at the intersection of science and development policy has received only indirect attention in the literature. Often, the role of these agents is, as it were, invisibilized as they metonymically disappear behind constructs like nation-states or governments (Eckl & Weber, 2007). However, some approaches offer starting points for our conceptual lens of semantic analysis. First, funding agencies have received new attention as intermediary organizations during the last decades from a political economy approach (Braun, 1998). They are subject to social and, in particular, political control and influence and design their funding programs according to the interests of their key stakeholders or, in case of public funders, according to the policy agenda of their principals. Second, more recent studies and reviews have focused on the mode of science governance and the position and function of intermediary organizations (e.g., Gläser & Laudel, 2016). One important aspect has been the effects of shifting authorities between the different elements of science systems, leading to new formations of influential actors such as funders, research-intensive organizations, and international scientific elites (Whitley, 2011). Third, the focus on descriptions of science policies in non-OECD territories is very recent. They are partly driven by the interest of how science governance is spread globally and how it develops local idiosyncrasies that have repercussions for

international collaborations (Drori et al., 2002; Finnemore, 1993). Partly they are motivated by institution-building initiatives to effectively manage research in their countries (Chataway et al., 2017; Mouton et al., 2015). Finally, some studies have taken on the phenomenon of *research for development* as an inter-sectoral funding policy goal and structure, portraying the interest-based funding of research and infrastructures in former colonies and countries with lesser resources for research (see Currie-Alder, 2015 for the United Kingdom, Canada, and Australia).

It is, therefore, a legitimate and important question to investigate research funders' takes on the issue of North–South research collaborations and to find out what generates, structures, and directs their beliefs and activities. We approach this question by means of an analysis of semantics that shed light on the expressions of these interests and directions.

Semantics as Indicator for Cognitive and Cultural Orientation

The search for the guiding principles of funders' actions introduces the second part of our argument. We address the importance of semantics for the structuring of the world in general and for science and scientific collaboration in particular. The argument, thus, takes a constructivist and communication-oriented approach. Shared semantics structure and guide human reasoning, and policymaking is no exception to that if one understands it as

a constant discursive struggle over the criteria of social classification, the boundaries of problem categories, the intersubjective interpretation of common experiences, the conceptual framing of problems, and the definitions of ideas that guide the ways people create the shared meanings which motivate them to act. (Fischer & Forester, 1993, pp. 1–2; see also Cornwall & Brock, 2005; Wodak & Forchtner, 2018)

Semantics shift over time which is an indicator for societal change. The discourses of science and interstate relations are no exception to that. If we look at the description of former colonies and economically less advanced states, we find that the ways in which these states are described and categorized have changed over the decades. A prominent example is the notion of the *Third World* which has seen its heydays in the 1970s and 1980s as an analytical and normative terminology (Tomlinson, 2003). The notion of the Third World has been almost completely replaced by that of the *Global South* or *developing countries* which bring with them their very own inherent pitfalls (Eckl & Weber, 2007; Mignolo, 2011). Other categories by international financial organizations, for instance, introduce classifications according to socio-economic income categories such as, for instance, the term *least developed countries* (LDCs). These classifications have a direct political and economic impact because they form the basis for the management of financial flows and decisively determine the possibilities of those states to access resources. Thus, concepts like the *Global South* are powerful constructs that contribute to structuring the social world by reifying classifications and stereotypes about the other.

Critics of development discourses in the Foucauldian sense have elaborated on these representational aspects of classification (e.g., Escobar, 2012). According to the critics, the development discourse presumes an understanding of what is the norm of modern life, exemplary in the Western lifestyle, and way of political and economic operation. When turning to the subjects of intervention, classic development agencies and analysts often operate on the basis of presumptions that include naturalization, othering, legitimation, hierarchization, and depoliticization (Ziai, 2015). These operations serve to justify the implementation of development interventions and their changes on the basis of a superior knowledge of what is needed to develop a country according to a certain (Western) model. Hierarchization of knowledge became a necessary function of development discourse to uphold the claim of knowing the various ways of developing a country, nation-state, economic system, or public services. In our analysis, we assume that various functions of the development discourse are at play, for instance, categorizing countries according to their scientific capacities along a model of deficiency and planned improvement of research infrastructures, to justify the development intervention and collaboration.

However, one can also attribute another function within the development discourse that helps to understand how agencies with different objectives can cooperate within the framework of development policy across different sectoral boundaries. The anthropologist Richard Rottenburg (2009) speaks of a meta-code in development policy in the sense of an *objective truth*, to which everyone agrees when interacting in development relationships as participants from different national, professional, and/or cultural backgrounds. The meta-code facilitates the transfer from one cultural framework to another but is limited to technical numbers and signs. In this article, we analyze the reference to such a meta-code among the donor side, leaving out the moments of negotiations between different stakeholders for the moment.

Similar to development policy, science has been shaped by “meta-narratives” (Peters, 2006, p. 225). These are liberal concepts such as freedom, disinterestedness, internationality, and universalism (Merton, 1973). They form a powerful framework that provides implicit and explicit orientation for scientists and science organizations. In addition, these narratives have been supplemented over time by ideas of economic usability and innovation. Influential concepts, such as *basic science* vis-à-vis *applied science*, pervade science policy and act as leitmotifs in political debates and policy-making processes (Schauz, 2014). Just as in the discourses of development cooperation, trends and linguistic shifts are always present. Flink and Kaldewey (2018), for instance, have illustrated how older conceptualizations of the relation between science and society, that is, the predominant contract metaphor, have been amended and partially replaced by terms like frontier research, grand challenges, and responsible research and innovation. The strategic and the unconscious, taken-for-granted use of concepts often flow into each other and cannot always be separated.

Finally, this brings us to the role of semantics in research funding for international projects and collaborations. The question is to what extent the competing meta-narratives of scientific collaboration and development cooperation are reflected in the funders’ perception of the world. Therefore, we ask in this article whether and, if so,

what role geographical and relational semantics of the *Third World*, the *Global South*, or *developing countries* and related constructs play directly or indirectly in the considerations of research funders. In the words of Fischer and Forester (1993, pp. 1–2), “[w]e need to understand just what policy analysts and planners do, how language and modes of representation both enable and constrain their work, how their practical rhetoric depicts and selects, describes and characterizes, includes and excludes, and more.”

At this point, a clarification is necessary. Our goal is not to write a history of semantics that characterize research collaborations from the past to the present. Nor do we want to investigate the historical use of terms such as North and South. Rather, we are interested in shedding light on semantic structures that currently shape the thinking and actions of research funding agencies. This interpretative approach is used to make sense of geographical self-orientations of research funding that is expressed when linking the scientific *we* in affluent countries and the *them* in low-income countries.

Data and Method

To capture the semantics of development discourses and international research collaboration policies, we created and analyzed a corpus of policy papers and two sets of expert interview data.

The first set of interview data was obtained from a research project on the uses and understandings of the concept *science diplomacy*, which has strong links to the topic of science for development. This set consists of 21 interviews with persons in charge or concerned with internationalization of research and funding at their respective institutions, that is, research funders, research organizations, and ministries for foreign affairs or S&T. The interviews took place between January 2017 and May 2018. The second set of interviews stems from a project on scientific collaborations of European and African scientists, aiming at mapping and assessing the recent developments in funding of medical and engineering topics. The selected 11 interviews with representatives from funding agencies were conducted from December 2016 to June 2018. Overall, we integrated 32 interviews from five countries in our analysis (DE: 13, FR: 7, JP: 1, SE: 4, UK: 7), which were either conducted in German or English.

We complemented both sets of interviews with recent policy papers. The body of these policy papers was compiled from the organizations’ websites and consists of three types of documents: (a) publications on organizational internationalization and international collaboration, (b) strategic documents for the interaction with Africa, and (c) strategies for ODA. To enable a cross-check with the statements from the interviews, we included only recent literature (from 2008 onwards) issued by the same organizations we conducted interviews with and supplemented by governmental documents. Thus, the corpus does not cover the complete range of European funders, research institutions, and governments engaged in international partnerships but a reconciled selection of important organizations. To better understand diversity in geographical discourses from the South, we added a selection of policy papers from South Africa, which constitutes one of the very powerful scientific systems in Africa and

whose foreign policy instruments include scientific collaboration with other African countries. All in all, we included 38 documents (DE: 7, FR: 12, JP: 7, SE: 1, UK: 7, ZA: 4) that were in their majority formulated in English, and partly in German and French.⁷

Obviously, the three sets represent a multinational, multilingual, and multi-organizational compilation of data originally collected for different purposes.⁸ Nevertheless, we argue that combining them in the analysis is permissible and yields certain advantages. The focus on international relations between funders, research organizations, and networks of scientists links all three sets. But while the policy papers denote concerted and edited views on these collaboration policies, the two interview sets contain more spontaneous, latent, and, thus, unedited statements. This allowed us to grasp the implicit handling of semantics in the interviewees' characterizations of collaboration. The interviews were recorded and transcribed and analyzed in their original language.

Subsequently, we employed a twofold strategy for analysis. First, we developed a dictionary of frequently used semantics in the policy discourse on developmental collaboration. The dictionary contained terminology often used in development discourse and in its critique in English, German, and French. Terms included geographical descriptions (South, North, Country names, regions), development policy terminology (sustainable, partnership, equality, development, capacity, ownership), and terminology such as dependence and independence. This lexical search of the analysis served to uncover the usage and distribution of existing metaphors and metonyms and can be characterized as a top-down approach. Second, we searched the transcripts and documents for qualitative descriptions of funding and collaboration relationships between individual countries and regions. This part of the analysis was bottom-up oriented and served to identify the implicit understanding of collaborations from the statements of the interviewees and policy papers. Finally, we related both analytical steps to each other in order to examine the extent to which the use of established semantics is linked to the everyday spatial characterizations by research funders.

Results

Top-Down Results of a Lexical Search

In our analysis, we started top-down from identifying key geographical metaphors that serve as orientation in documents and interviews and that have been used in the past to mark differences and hierarchies. The four compass points, for instance, appear in a diverse range of meanings, often signifying country names and regions such as the North Atlantic as a reference region (e.g., DE-Doc5). Fixed terms, such as the *Third world*, do not appear at all. The documents and interviews, thus, reflect a societal trend to abandon the Cold War rhetoric of the three worlds—this is parallel to the demise in using the term in academic texts as stated above by Tomlinson (2003). The term *Global South* appears only eight times in all texts, six times alone in South African documents.

The metaphor of *North–South* relations is also seldom mentioned and primarily appears in the interviews conducted with representatives of development aid organizations. Texts from Research Funding and Development Agencies do not show significant differences in absolute numbers of referring to *North* (32 to 22) and *South* (55 to 69). Documents from Foreign Offices or research conducting agencies are much less likely to use this compass-direction terminology.

While compass points seem to have less weight, *development* remains a key term in all documents and interviews with over 2000 mentions. The terminology is used very frequently in French texts (1195 mentions in 19 texts), followed by South African (395/4), Japanese (377/8), and German texts (270/20). Given the organizations and their strategic aims and self-descriptions collected in our dataset, also the term *developing country* continues serving as term to mark hierarchies between countries (187 mentions). Both terms *development* and *developing countries* are used most frequently by research funding and development agencies. At the same time, classic dichotomies, such as *modern* and *traditional*, are negligible in their use throughout the 70 texts and seem to have lost their descriptive potential and normative appeal when used directly. However, this does not mean that the concept of differences according to assumed stages of modernity has disappeared altogether.

We further disentangled the term due to its frequent use in concepts, such as *research and development*, from the science policy field and due to its reference to events within the five countries. *Ownership*, *progress*, *partnership*, *equality*, and *capacity* (building) are terms closely connected to *development*. This step helped to differentiate between references to domestic scientific development and to the development of external, *other* areas such as African or other countries. South Africa is a case in point, where the deployed term *development* signified the domestic development regarding the abolition of poverty and inequality with the help of science and innovation policies. The strategy documents and interviews reveal that *progress* in research policy is quite often referred to technical and innovation developments. There is also a noteworthy connection between the term *progress* as a function of international collaboration valid for science policies in the selected countries as well as in countries that are to be *developed*.

An overlap of science and development policies especially became visible in the different texts through the proximity of terms, such as scientific *capacity* and *development*, as a reflection of policies aiming at increasing the scientific infrastructure and education of targeted countries. *Capacity* not only appears often in close relationship to *development* but also to *ownership*, suggesting a strong semantic linkage between the opportunities to organize scientific activities along a *research and development* model and to generate own contributions or to take responsibility for co-funding research infrastructure and research collaborations.

Given the timeframe of texts ranging from 2008 to 2018, with the majority of texts from 2017 and later, the terms *sustainable* and *sustainability* are frequently used together with the term *development*. The 2016 ratified UN 2030 Agenda for Sustainable Development (containing the Sustainable Development Goals, SDGs) in its usage serves among others as an orientation and justification for cooperation and as an explanation for increased focus of scientific involvement in solving the challenges that

arise when focusing on the different SDGs. South Africa is no exception in this regard. However, it goes further to align the African Agenda 2063 and its National Development Plan to the SDG and to science and foreign policy goals.

Bottom-Up Results: Following Conjunctions and Actions

In parallel to the lexical search for keywords of the developmental discourse, we studied the passages that contained statements regarding the collaboration with African countries. Such statements were made in 37 of 70 analyzed texts. This investigation yields two primary insights. First, we note that there is a general tendency to refer to *Africa* as a single geographical unit. In addition to comments on individual countries, programs, or institutions, we repeatedly find passages that contain global statements about the state of *African* science and HE. A differentiation of cases usually occurs when interviewees referred to developments, for instance, when talking about their own projects and partners.

Moreover, the analysis gives the impression that a *deficit model* of the performance of African science systems prevails in large parts among the research funders from Europe and Japan. Both observations are semantically connected. In their global statements on Africa as a single entity, the different interview partners identify a whole series of challenges which are used as explanations for the perceived inferior capacities of African cooperation partners.

Our data show that structural aspects are held responsible for the deficits. The personal performance and qualifications of individual researchers with an African background, however, hardly play a role in the interviewees' considerations. The conditions that putatively restrain African scholars from eye-level collaborations consist of three categories. First, interviewees claim that financial aspects, that is, a lack of funding of both HE and research, hinder African scientists in their development. Second, the texts point to political limitations such as a deficit of academic freedom and the presence of severe corruption. This implicitly alludes to the liberal meta-narratives, which regard the autonomy and disinterestedness of science as indispensable prerequisites for successful research. Finally, our data address scientific shortfalls such as a lack of proper research infrastructures and academic qualification.

The three categories are obviously closely connected to each other and cannot always be separated. Yet, in sum, they create the semantic image of a continent whose problems make it difficult for it to take part in equal partnerships in scientific research. The primary narrative behind these statements, thus, adheres to a model of deficiency. The general tone of both the interviews and the policy paper reflects this view. Verbs, such as *help*, *support*, *enhance*, or *improve*, pervade the data sets when it comes to the role of European and Japanese researchers and research funders. African countries are seen as *in need of* support, *request* help, are *dependent* on, or *grateful* for foreign funding. Statements of this type were present in about 40% of the texts that referred to the collaboration with Africa as a whole or individual African countries, with documents and interviews having virtually the same number of mentions. The deficit model is also linked to demanding changes and reforms from African policymakers. As one interviewee stated, "Africa (sic) has to change its educational system, university

system” (SE-Int4) which vividly illustrates the general reference to the semantics of unspecific geography.

The second finding of our semantic bottom-up analysis of the texts from the North is that—in contrast to such generalizing statements—there is also a semantic block within the deficit model that constitutes a *model of limited exceptions*. This block is characterized by the fact that individual states, institutions, or laboratories are excluded from the anonymous description of *Africa* and highlighted for their explicit achievements and performance. However, the analysis shows that such exceptions are primarily mentioned in connection with the general deficit model describes above. For instance, one interview partner links political problems and scientific prowess by stating that in Rwanda, “you could say many things about [President] Kagame but science is very strong and they are developing very well” (SE-Int4). In another interview, the cooperation with Egypt and South Africa was highlighted as a positive example to underline the shortcomings in the cooperation with Tunisia and Morocco. Semantically, these contrastive statements in our data sets are linked by conjunctions like, for instance, *but*, *yet*, *however* and their equivalents in French and German. The exceptions are, thus, embedded in a perspective and linguistic framing of Africa as a single continent still to be developed and which still depends on the support by Northern partners. These semantic structures appear in 20% of the documents and 40% of the interviews from Europe and Japan that contained explicit statements on collaboration with Africa and African countries. They were not restricted to data obtained from development agencies but were also present in interviews and documents from research organizations and funders. In the admittedly somewhat smaller Japanese sample, we found only one narrative, namely that of developing deficient African capacities by means of excellent Japanese S&T. There is, however, one country that is excluded from both the deficit model and the model of limited exceptions. When talking about South Africa, funders repeatedly expressed their appreciation of both the science system and the administrative capacities of this particular country, using adjectives like *excellent* or *important* to frame it as exceptional. The documents from South Africa show different linguistic patterns. Although these texts also contain verbs like *develop*, *support*, or *facilitate*, they lack references to deficits. It is emphasized that South Africa has strong capacities in S&T and intends to use them in particular for the economic development of Sub-Saharan Africa, with strong links to the African Union’s own Strategy for Science and Technology (STISA 2024; ZA-Doc3). The South African semantics, thus, represent a kind of hybrid *primus inter pares* approach that oscillates between South Africa’s leading role on the continent and partnerships on equal footing with other African countries.

It has to be noted though that this contrast does not necessarily mean that European funders are generally unaware of their own perspectivity. Some interviewees indeed reflected upon their funding and collaboration behavior. They acknowledge the asymmetry between research capacities in Africa and Europe and their role in creating and stabilizing these asymmetries, in particular by the limitations that are imposed by funding policies from the North. For instance, several interviewees pointed out that it would actually be better to merely provide funding, whereby the actual work, that is, the selection of scientific projects, methods, and partners involved, should lie in the

autonomous choice of the respective scientific communities. Yet, it is questionable to what extent this shift toward a self-organization of science is compatible with the external demands placed on the research funders. Moreover, these reflections address primarily advisable changes in how to design funding policies and leave the general perception of Africa science systems as deficient untouched.

In some cases, these reflections are embedded in evaluative statements of other organizations, notably between research funders and development funders. The reflection took the form of stating a difference between both sectors when it came to the understanding of *true partnership*. Science funders claimed to actually provide a more equitable character of collaboration due to its assumed egalitarian norms of selection processes, in which, for instance, researchers from European and South-Asian countries come together as research partners with equal chances in the selection process. Development aid instead would turn the non-European country into dependency (DE-Int8). Other interlocutors point to a division of labor and admit that scientific and development organizations have different strengths in evaluating research for development: scientific quality being best assessed by research funders and relevance by development agencies (SE-Int3).

Discussion

In this article, we argued that research funding plays an important role in shaping scientific collaborations between the North and the South, which is why we need to learn more about the discursive structures that influence funders' perspectives. We, thus, aimed to reconstruct the nets of meanings with the help of a semantic analysis. In sum, the semantic structure of our European and Japanese data follows the logics of deficits and limited exceptions from which the South African viewpoint considerably differs. However, scientific cooperation is perceived as a key tool to guarantee capacity-building in African countries both in the North and in South Africa. The statements in documents and interviews make use of vocabularies taken from developmental collaboration with *development* being the main focus and primary target of collaboration. European and Japanese vocabulary operates against the backdrop of a deficiency model when it comes to the description of interactions with African partners. Exceptions are possible but are predominantly linked and opposed to other deficiencies. Our insights contribute to two discussions: On one hand, they are relevant for development policy; on the other hand, they shed new light on the role of research funders and, thus, contribute to the study of the politics of science. We use the remainder of this article to discuss the implications for both strands of research.

The central result of our study is that funders and agencies involved in North–South collaborations describe these interactions at least to the same extent with semantics taken from a development policy discourse as they make use of the liberal meta-narratives of science. Semantics of developmental collaboration blend into and partially surpass the meta-narratives of autonomous, emergent scientific partnerships that are usually upheld by (semi-)autonomous research funders. The principles of scientific cooperation—equality, partnership at eye level, universalism—are present in the background but they are preceded by narratives that construct inequality in

capacities and abilities. Narrations of necessary development, requests for help and continuous support point to the requirements for entering the international scientific system at all. In this view, *Africa* must first be empowered by capacity-building to become an equal partner in this idealized global system. Equality among partners surely is an important issue for research agencies and funders, yet it remains a distant goal which calls for short-term capacity-building. This observation resonates with the functions of development policy as analyzed by its critics. The diagnosis of a development deficit makes it possible for funders to make radical demands for the restructuring of politics, science, and society in African countries. Since these deficits are interwoven, it is insufficient to make progress in just one dimension. The simple expansion of the HE sector and S&T, for instance, is obviously not enough to become part of an international scientific community. However, it remains unclear who determines the point in time at which African scientists and science systems are considered sufficiently qualified to drop the distinction between a deficient Africa and an advanced North. With regard to development policy, one explanation for the dominance of a deficit model is that the funding agencies benefit from this narrative because it justifies their activities with regard to a specific group of countries. One might think that statements that reflect the perspectivity of funders' viewpoints indicate a change and a reorientation in dealing with cooperation with African partners. Yet, on the contrary, the indications of necessary modifications in research funding and policy fit in well into the scope of activities of the funding agencies. They create a new demand, which in turn needs to be addressed with new policies, thereby perpetuating existing structures in North–South relations. However, it must also be noted that there are apparently ways to exit this cycle, as the example of South Africa illustrates, a country that has invested considerable amounts of funding in S&T in the last years and has become a serious and powerful advocate for more equitable program design. Indeed, the example of South African semantics on research funding stands out from its Northern counterparts as it stresses the importance of equal partnerships between African countries and regions to profit from S&T developments.

Our results prompt additional questions for future research. We based our argument on the conviction that language enables and constricts behavior in the funding of North–South relations. However, our investigation is only a first step in a more comprehensive attempt to better understand the role of research funders in these collaborations. The next step for empirical analyses would be to investigate the relationship between semantic structures and the actual funding decisions and evaluation practices as their material realization. Future research needs to build a bridge between the semantic structures we found in our analysis and the streams of research funding on which the collaborations are based, for example, by looking at project calls, program evaluations, or annual reports. It would be particularly worthwhile to investigate the differences in received funding among African countries and to link them with semantics that are attached to the respective countries for a more fine-grained view.

Furthermore, it should be examined whether our results are also valid for other configurations of collaborations and countries. For instance, scholars could investigate additional South–South collaborations (e.g., between China and African countries) or

interactions among the BRICS states to see whether there are counter-narratives to the dominant North–South semantics. Our insights from the analysis of the South African documents point into this direction. In these instances, the boundaries may become blurred between the focus on capacity-building, as it appears in cooperation with the Global South, and partnerships at eye level, as they are implicitly assumed among states in the Global North.


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Notes

1. We concentrate on the relations between Africa and the Global North because of our research focus and expertise. This is a limitation of our study of which we are fully aware and which we discuss at the end of this article.
2. <https://data.worldbank.org/> (last accessed 9 April 2019).
3. <http://data.uis.unesco.org/> (last accessed 9 April 2019).
4. Some of the figures warrant attention because the data are partially scarce, especially in the case of African expenditures in the UNESCO database, where some countries and many expenditure figures for the time from 2011 to 2016 are missing.
5. We are aware that not all the funds are being spent in African partner countries but are also being used to sustain researchers and research infrastructures at the German partner sites as well. Funds available for direct spending in recipient countries vary according to legal frameworks, policy goals, and program design.
6. We use the label North–South collaborations as a pragmatic descriptor which is well-established in the discourse. Due to the limited space, we have to refrain from a detailed reflection of the associated connotations, but see Eckl and Weber (2007) for an instructive discussion.
7. In the following sections, we use the category *texts* when we refer to aggregate of publications and conversations. In case we refer to individual statements or data sets, we specifically use the terms *documents* and *interviews* respectively.
8. The interviews and policy documents were rearranged into four sets according to the organizational background of interlocutors and documents: (a) Research Conducting Organizations (13 texts), (b) Foreign Policy (9), (c) Research Funding Agency (39), and (d) Development Agencies (9).

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