



## Problematizing Scientization in International Organizations

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### Abstract

Comparative education studies examined the roles multilateral organizations and non-governmental organizations play in global governance and international development. Emphasis has been given to their engagements both at policy and practice levels as well as their impacts. Generally, the mechanisms international organizations use to govern education and development seem qualitatively to change over time. The most recent emerging research trajectory explains how international organizations primarily use the power of scientific knowledge for organizational legitimacy, credibility, and impact. This is referred to in the literature as soft governance, epistemic governance, scientization, or scientific multilateralism, as it significantly relies on the authority of scientific knowledge as opposed to hard, financial preconditions, for global governance and development. Our understanding of scientization is still in its ‘infancy’, partly due to its relatively recent emergence and partly due to the use of varied indicators to assess it across organizational types. To contribute toward further theorization, this study problematizes scientization in international organizations, with a focus on multilateral, intergovernmental organizations. The study is organized around answering this overarching question: What are the conceptual and methodological attributes or features of scientization in international organizations? Using sociological theories and conceptions of policymaking and transfer, it discusses core substantive, methodological, and theoretical issues of scientization having relevance for further research.

**Keywords:** epistemic governance, international organizations, multilateral organizations, scientific multilateralism, scientization

### Introduction

Multilateral organizations, nation states, associations and organizations, social movements, and sciences and professions are considered as the major drivers of socio-economic, political and knowledge globalization. Studies have examined the roles international organizations, including multilateral organizations and non-governmental organizations play in global governance and international development (e.g., Alexander, 2002; Chabbott, 2003; Harber, 2014; Heyneman & Lee, 2016; Jacobi, 2012; Jones, 2004; Jones & Coleman, 2005; Kendall, 2009; King, 1991; Mundy, 2002; 2006; Singh, 2011). Their engagements both at policy and practice levels as well as their impacts and contributions to development mainly in the Global

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South are extensively studied. Generally, the mechanisms international organizations (IOs) use to govern education and development seems qualitatively changing over time.

Comparative education scholarship on global governance seems to generally pursue three nonexclusive research strands (Bekele et al., 2021; Zapp, 2020). What appears to be the oldest and most dominant view portrays IOs as powerful ‘instruments’ for promoting and transferring Western cultures and policies worldwide. Among other topics, the existence of power imbalance between the West and the Global South as linked to global governance and development is studied. To unravel the ways power manifests itself, studies of this type (e.g., Chabbot, 2003; Dale, 2007; Jones, 2007; Menashy & Shields, 2017; Moutsios, 2009; Mundy, 2006; Shahjahan, 2012) draw on conceptions from discourse analysis and critical theories.

This research trajectory generally seems consistent with the conceptions of world systems theory (as in Wallerstein, 1974) and explains how IOs and powerful countries (the core) dominate policy making and its global transfer. The stated power imbalance between the West and the Global South is considered an instance of the traditional regulatory, hard, or financial governance model that has ruled the world for decades. This governance model seems to relegate the Global South to the periphery, to the receiving end of educational aid and policy (Bekele et al., 2021).

What appears to be a more recently emerged research strand views the world society as a cultural society, which is generally in harmony with the tenets of world polity theory (as in Meyer et al., 1997; Meyer, 2009, 2010). Accordingly, global educational governance draws on and promotes a shared conception of world society, humanity, development, and sustainability (Bekele et al., 2021; Bekele & Ofoyuru, 2021). That IOs position themselves as policy activists and advocates (Mundy, 2006), the significance of organizational professionalism (Chabbot, 1998), and institutionalized norms for schooling worldwide (Wiseman et al., 2010) appear variants of this research trajectory. ‘Soft’ governance is the modus operandi of global governance and development, as consensus-building rather than binding laws is considered as an organizing logic for organizational operation and impact (Zapp, 2020).

The third research trajectory explains how global governance *primarily* uses the power of expert ideas or scientific knowledge for organizational legitimacy and impact (Bekele et al., 2021; Niemann & Martens, 2018; Zapp, 2018, 2020). This is also referred to in the literature as soft governance, epistemic governance, scientization, or scientific multilateralism, as it significantly relies on the authority of scientific knowledge as opposed to hard, financial preconditions, for global governance and development. This seems the most recently emerging research trajectory and is generally consistent with the discourses of the knowledge society and economy (Bekele et al., 2021), as the significant production, dissemination, management and application of scientific knowledge seems to characterize the increasingly globalizing world society and economy (Carnoy, 1999; Castells, 2000; Drori & Meyer, 2006; Gibbons et al., 1994; Knorr Cetina, 2007; Wiseman et al., 2016). Drori and Meyer (2006) maintain that “Discussions of ‘the knowledge society’, ‘knowledge work’, and ‘expertise’ call attention to the generalized authority of professionalized knowledge... They emphasize the wide scope of the scientization of society” (p. 50). Accordingly, IOs position themselves as alternative and sometimes competing sites of knowledge production to the traditional sites such as universities and government research and development units.

However, two points are worth mentioning about the nature of the three governance models outlined above. The models could be considered as complementary; IOs could use all the three forms of governance (hard, soft and epistemic) simultaneously. It is thus useful to consider a hard-soft governance continuum to clearly understand the distinctions in a historical context. It is logical to argue that IOs *primarily* used hard, financial governance model in the 20<sup>th</sup> Century, but they are since the turn of the Century primarily adopting epistemic governance, see the section below. As indicated above, epistemic governance could be considered as a variant of soft governance; both rely on consensus to govern development and education although they employ different strategies. Simultaneously employing the three strategies could be considered as effective in meeting organizational goals but could also raise issues linked to ethics, and then organizational credibility and legitimacy.

Our understanding of *soft* and *epistemic governance* or *scientific multilateralism* in education is incomplete and inadequate partly due to their relatively recent emergence and partly due to the use of varied indicators to assess them. The methodological, theoretical and conceptual foundations and features of scientization in IOs are not satisfactorily studied. Moreover, existing scholarship mainly concerns scientization or epistemic governance in the few but dominant multilateral organizations such as the World Bank, UNESCO, and OECD (Niemann & Martens, 2018; Zapp, 2020). Consequently, a “more thorough reconceptualization of IOs as knowledge actors in global education governance is a task from which scholars of international organizations and comparative education might benefit in explaining educational change worldwide” (Zapp, 2020, p. 17).

To extend our understanding and then contribute toward theorization, this study interrogates scientization in IOs, focusing on intergovernmental organizations. The purpose is not to bring consensus about scientization but to problematize it using varied theoretical perspectives. Discussions focus on its meaning or definition, rationale and purpose, indicators, and dissemination mechanisms. This analysis eventually supports identifying core attributes of scientization and associated issues. The contribution and originality of this study lie in its analysis of the methodological, theoretical and conceptual features of scientization vis-à-vis discussions of emerging theoretical frameworks in higher education and society.

This study is organized around answering this overarching question: What are the conceptual and methodological attributes or features of scientization in international organizations? To support the production of contextualized knowledge (Bekele, 2018), and as scientization in IOs seems to emerge from and relies on the logics of traditional science (Gibbons et al., 1994), a brief overview of emerging knowledge production cultures in higher education and society is provided next. This could enable discussions of the conditions or factors that trigger and justify scientization in IOs. The section that follows explores the conceptual features of scientization in IOs, focusing on its meaning or definition, rationale and purpose, indicators, and dissemination mechanisms. Using sociological theories and conceptions of educational policy making and transfer, the last section highlights issues and tensions linked to the production, transfer, and application of scientific knowledge by IOs. Areas for further study and theorization are identified in the concluding section.

## Emerging Theoretical Frameworks as Triggers of Scientization

Emerging theoretical frameworks attempt to explain how and why the traditional notions of scientific knowledge production are inadequate if not completely irrelevant to contemporary societies and economies. They aspire to better explain emerging education-society linkages and engagements. To situate this study within larger regimes of knowledge production, this section briefly outlines emerging theoretical frameworks in higher education and society, as they could reveal the conditions and factors that trigger and scaffold the emergence of scientization in IOs.

The hitherto dominant conceptions of disciplinary cultures (e.g., Becher, 1981, 1987; Clark, 1987; Knorr Cetina, 1999, 2007; Stark et al., 1986), which Gibbon et al. (1994) dubbed as Mode 1 knowledge production or traditional science, appear inadequate to effectively explain recent transformations taking place in society and economy. The presumed theoretical inadequacy of Mode 1 science is partly attributed to the priority it gives to theoretical significance over practical significance. Even university applied and action research conducted within the theoretical confines of disciplinary cultures do not presumably match the ever fast-changing needs of contemporary societies and economies. Consequently, such emerging theoretical frameworks as epistemic cultures, the Helices models, Mode 2, and Mode 3 appear to have better explanatory power than theories on disciplinary cultures (Drori & Meyer, 2006). These frameworks seem to challenge the theoretical adequacy and sometimes relevance of traditional science and hence, they partially trigger or contribute to scientization in IOs.

Conceptions of epistemic cultures, knowledge cultures and macro epistemics appear to transcend the theoretical confines of disciplinary cultures, as they presumably better explain the interactions between society and knowledge production (Knorr Cetina, 1999, 2007). Epistemic cultures, which are considered as complementary conceptions to disciplinary cultures, explain the expansive and inclusive nature of scientific research (Knorr Cetina, 2007). Propositions include the conception of science/research as trans-epistemic involving scientists, non-scientists, materials, technologies; and the contextuality and disunity of science- the scientific method is multi-textured rather than a standardized tool for reason or rationality. The significance of collective epistemic subject-groups of scientists working on projects are considered the core attributes of epistemic cultures (Knorr Cetina, 1999).

Knowledge cultures and macro epistemics also supposedly influence the volume and quality of knowledge being produced in contemporary societies (Knorr Cetina, 2007). Knowledge cultures generally refer to national policies and/or regulations related to science, knowledge and research; higher education regulatory bodies; funding regimes; socio-cultural fabrics of society; and level of economic development and governance style. Macro-epistemics, on the other hand, acknowledge how professional associations, publishers (including editors and reviewers), professional networks, and quality assurance agencies at various levels play critical roles in the production and transfer of scientific knowledge. These conditions seem to challenge the traditional organization, conception, and practice of scientific research; research is reconceived to become a multistakeholder and democratic venture.

Overall, epistemic cultures, knowledge cultures and macro epistemics seem to jointly offer novel conceptions and practices of scientific research that transcend the traditional conceptions which situate research within university spheres of influence- academic and disciplinary cultures (Knorr Cetina, 2007). The frameworks seem to deconstruct our conceptions of

traditional science, including the scientific method. Accordingly, conditions and factors at the individual (researcher), institutional, national, regional, and global levels seem to jointly and directly determine the quality and volume of knowledge production in contemporary societies. Although it is not explicitly referred to in Knorr Cetina's conceptions, the spheres of influence of IOs are felt at institutional, national, regional, and global levels. Their funding or sponsoring of scientific research and their participation in global educational governance are powerful avenues of their influence. The researcher is thus no longer considered as the sole and even the major factor of knowledge production. This emerging research trajectory seems to partly reflect higher education intention and strategy to improve its social relevance and significance amidst changing circumstances (Bekele & Ofoyuru, 2021). It also reflects the economic interest of higher education institutions (Slaughter & Rhoades, 2004). Such terms as market cultures, economic cultures, entrepreneurial cultures, and academic capitalism are used to designate this emerging research trajectory, which appear to be somehow consistent with attributes of Mode 2 knowledge production.

Mode 2 science (Gibbons et al., 1994; Nowotny et al., 2001, 2003; Marton, 2005) also consider global and national 'forces' that affect knowledge production in an age of globalization. The defining characteristics of Mode 2 include that knowledge is generated within a context of application versus basic science, transdisciplinary versus multi/disciplinary orientation is preferred, diverse knowledge production sites such as organizations are acknowledged, knowledge is highly reflexive versus objective, and novel forms of quality control versus the peer review system are emerging. These conceptions seem to recognize that knowledge production is being substantially driven by market/economic motives, the traditional conceptions of science and its quality parameters are questioned, and alternative and competing knowledge production sites such as IOs are emerging. It could thus be argued that Mode 2 conception provides a strong indication of the emergence of scientization in other organizations in society besides universities.

More recent conceptions, which are designated in the literature as Mode 3 thinking (Sandstrom, 2014), seem to strengthen several of Mode 2 arguments. Mode 3 thinking also claims how the general context of recent developments in higher education and society affects knowledge production (Sandstrom, 2014). Mode 3 explains the nature of emerging higher education-society engagements and linkages regarding socio-economic development, democratization, and public accountability (Barnnet, 2004; Carayannis & Campbell, 2006; Rhoades & Slaughter, 2006). Similarly, academic capitalism and the new economy, which is considered a variant of Mode 3, explains the commercialization of education and research (Slaughter & Rhoades, 2004). Generally, Mode 3 conceptions aspire to explain how research is becoming a multistakeholder engagement and how it takes purely applied trajectories to maximise higher education's social relevance and significance (Bekele & Ofoyuru, 2021).

Overall, the aforementioned conceptions seem to extend and deepen our understanding of how scientific research is conceived and conducted beyond the theoretical confines of traditional science, Mode 1. The emerging conceptions seem to recognize the crucial roles others including organizations play in knowledge production. The focus seems on *knowledge translation* to better and more directly inform policy making and practice. This purely applied research ambition partly requires engaging public and private stakeholders as well as local and IOs during its inception, conduct, and dissemination. This transeptic and pragmatic nature

of research seems in no match with the logics of applied and action research conducted within the traditional conceptions of science. The emergence of research councils in many countries and their research funding priorities seem to partly but powerfully explain scientific research's transepistemic and situated nature.

The stated theoretical and practical inadequacy of traditional science conducted primarily within university contexts seems to justify the development of new theoretical frameworks in higher education and society, and the emergence of prominent knowledge production sites in society, IOs. Consequently, the relatively new theoretical frameworks in higher education and society (epistemic cultures including knowledge cultures and macro epistemics, Mode 2 and Mode 3) could be partially considered as theoretical justifications for the prominent emergence of scientization in IOs.

## Scientization in International Organizations

### Emergence and Meaning of Scientization

Since the turn of the Century, *scientization* has become a major cultural transformation in IOs (Broome et al., 2018; Rautalin et al, 2021; Zapp, 2017, 2018). Zapp (2018) observed a “striking increase in scientific activity since the late 1980s and particularly since the early 2000s across organizational types... some of these organizations are among the most productive science producers worldwide” (p. 3). It must be made clear that IOs have been somehow using scientific knowledge to justify their decisions since their establishment; academic research has been widely appropriated to inform policy making and planning. Even some such as the OECD were created as knowledge organizations from the very beginning. When the OECD was found in 1961, the goal was to collect and analyze data to better inform decisions but in the 1990s, the US and other members encouraged the organization to develop educational tests (Sellar & Lingard, 2014); it was thus created as a knowledge organization. However, since recently, various types of IOs appear to *primarily* use scientization as their modus operandi. Drori and Meyer (2006) maintain that “science activities add new missions to other social organizations and institutions. As a result, organizations whose primary mission is not scientific add scientific components to their work: from corporate in-house R & D labs to forensic scientists in policing to educational professional advisory boards in school districts” (p.51). Universities are thus no longer considered as the sole and even the most authoritative producers of scientific knowledge; the intellectual space is now shared with IOs. Scientific multilateralism is becoming a prominent strategy shaping global governance and international development.

However, Mode 1 science still provides the theoretical and conceptual foundations and tools for the newly emerging scientization efforts in IOs (Gibbons et al., 1999). The logics and general approaches of traditional science seem still relevant for scientization in IOs. Research in IOs directly emerges from real societal problems and challenges and aims to support evidence-driven decision making. Moreover, researchers working for IOs are graduates of universities. Research collaborations and partnerships existing between universities and IOs also allow cross-fertilization of ideas having direct implications for policy making and practice. Scientization is however entirely conceived and practiced within discursive and politicized

environments and is situated purely within applied trajectories. The distinction between scientization in IOs and traditional science is not however always crystal clear.

Researchers epitomize scientization in IOs in different ways, often reflecting their discursive understandings of the phenomenon. It is conceived as “the rationalization of social order and evidence-based global governance” (Zapp, 2018, p. 3); the “strategic production, dissemination and transfer” of scientific research and policy-relevant knowledge (Zapp, 2020, p. 2); the “increasing reliance of decision-makers on policy advice ...based on scientific knowledge and claims” (Christensen, 2018, p. 292); and a process for “implementing and disseminating rationalized cultural models” (Rautalin et al., 2021, p. 5). As research problems directly emerge from real societal challenges and needs, and as knowledge is translated into practical policy ideas and tools, scientization could be considered as a powerful variant of evidence-based decision making in organizations. Applied and action research conducted by universities seem to generally parallel the logic and purpose of scientization in IOs, albeit that research in IOs is conceived and framed within larger discourses of global governance and international development. Generally, scientization is conceived as a process of producing, disseminating, and translating (practicing) scientific knowledge within the contexts of developments taking place in society. It concerns the rationalization of organizational decision making and serves multiple and sometimes conflicting purposes.

### **Purpose of Scientization**

International organizations use scientization to meet varied purposes. What appears to be the most prominent purpose is using scientization as a powerful strategy for global governance of education and international development. Such direct and historically dominant governance models as financial and normative regulations appear ineffective if not irrelevant within the general trends of societal transformations (Broome et al., 2018; Francesco, 2014; Mahon, 2009; Moos, 2009; Niemann & Martens, 2018; Zapp, 2018, 2020). Scientization is thus considered as a “soft form of governance” (Moos, 2009, p. 397); “cognitive/epistemic governance” (Zapp, 2017, p. 2); “indirect expressions of power” (Broome et al., 2018, p. 518); and “soft governance through hard facts” (Niemann & Martens, 2018, pp. 268-269). The authority of scientization is “cultural rather than purely political or economic. It is powerful, but not coercive: ‘soft power’, anchored in mundane procedures; oriented to isomorphism, but in voluntaristic forms” (Drori & Meyer, 2006, p.67). That world society historically attaches supreme significance to science seems to contribute to the salience and prominence of scientization in IOs. In the absence of binding laws and instruments, and within the discourses of the informational and knowledge society and economy, scientization becomes a powerful form of transnational governance.

As Table 1 below indicates, scientization seems to also play discursive roles. It supposedly boosts organizational legitimacy, credibility, and impact. Organizations use scientization for ensuring their own acceptability, reputation and status in global governance as well as in “advancing their agenda and in countering political resistance from member states” (Zapp, 2020, p. 2-3), for reinforcing “their expert status” (Broome et al., 2018, p. 514), to gain “public attention and policy traction” (Broome et al., 2018, p. 519), to establish “social hierarchies of ‘good’ and ‘bad’ performers” (Broome et al., 2018, p. 518), and to embody “their

organizational discourses” in their knowledge production function (Mahon, 2009, p. 83). It could thus be asserted that scientization could be used as a powerful instrument to enhance 1) the impact IOs would like to bring to global governance and international development through evidence-based decision making, and 2) their own organizational identity and competitiveness. However, critical (discourse) analyses of official documents including their scientific publications could further reveal tensions and issues linked to these complementary and sometimes conflicting roles of scientization in IOs.

*Table 1. The instrumental roles scientization play in IOs*

| <b>Zapp 2020</b>                         | <b>Broome et al. 2018</b> | <b>Hel &amp; Biermann, 2017</b> | <b>Mahon 2009</b>              |
|--|---------------------------|---------------------------------|--------------------------------|
| Acceptability                            | Exercise agential         | Saliency                        | Embody                         |
| Reputation                               | power                     | Credibility                     | organizational                 |
| Status building                          | Reinforce expert          | Legitimacy                      | discourse in                   |
| Impact                                   | status                    | Assessment                      | knowledge                      |
| Advance agendas                          | Establish social          | Advice                          | production                     |
| Counter resistance from member countries | hierarchies of performers | Solution                        | Draw on disciplinary knowledge |

### **Indicators of Scientization**

As scientization in IOs is a relatively recent development, there does not appear to be a shared set of indicators to assess it. Available literature identified such indicators of scientization as appointments of academics to commissions and academic citations in commission reports (Christensen 2018, p. 292); “knowledge production, dissemination, and impact on policy and practice” (Menashy & Read, 2016, p. 3); “rules, procedures, or standards for monitoring and reporting” (Niemann & Martens, 2018, p. 268); “prototype instruments for policy benchmarking” (Francesco, 2014, p. 9); and the “numbers of scientists and science-trained professionals, scientific publications, and scientific conferences” (Drori & Meyer, 2006, p. 50). These indicators appear as patchy as they are inadequate to capture the versatility of scientization.

Zapp (2017) provides what appears to be the most comprehensive set of indicators that cover the span of knowledge production and its eventual translation to policy. Indicators include knowledge production (funding research, conducting research), knowledge management (publishing research, assembling knowledge-databases, standardizing knowledge-indicators rubrics), knowledge transmission (disseminating knowledge- conferences, talks, seminars, lectures and workshops, teaching/training and certifying- training centres, platforms and networks knowledge, applying knowledge, and celebrating knowledge) (p. 5). Research collaborations and partnerships of IOs with universities is also considered an indicator (Zapp, 2018, p. 5). All these indicators appear to jointly reflect the entire research process and outputs as well as their translation to policy and practice. However, the indicators seem to lack an organizing theoretical logic and hence, do not allow for a deeper and holistic understanding of the conceptual foundations and features of scientization in IOs.

The quality of knowledge IOs produce is also open for discussion. Zapp (2018) maintains that “quality, originality and usability of research seem to matter far more” for IOs (p. 15). That IOs a) draw on massive data sets collected from varied transnational contexts, b) conduct



rigorous statistical analyses, and c) publish journal articles, books, and book chapters in significant international outlets seem to generally indicate quality and quality assurance efforts. Their “definitions, categories, and normative standards... and often-unquestioned assumptions as well as particular recommendations about the possibilities and needs of its control” (Bartels, 2018, p. 52) are also considered powerful indications of quality parameters in scientization.

However, that IOs also use scientization to boost their own organizational salience, credibility, and legitimacy points to issues linked to research ethics. Issues linked to bias and conflict of interest could be raised in relation to IOs’ efforts to translate the knowledge they produce to policy ideas and plans, which are then used as ‘standards’ to judge country or system performance. Broome et al. (2018) are critical of how IOs embark on benchmarking and ranking countries based on their research:

the ways in which international organizations use benchmarking to orient how political actors understand best practices, advocate policy changes and attribute political responsibility thus constitutes ‘bad science’. Extending research on processes of paradigm maintenance and the influence of international organizations as teachers of norms or judges of norm compliance, we show how the indirect power that international organizations exercise as evaluators of relative national performance through benchmarking can be highly consequential for the definition of states’ policy priorities (pp. 514-515).

Broome et al. (2018) further warn that “reliance on these problematic tools to construct transnational knowledge distorts how we interpret the world, as well as how we seek to change it” (p. 534). Obviously, not all efforts of benchmarking are flawed; the politicization and commercialization of the entire research process and the mechanisms used to transfer its outcomes globally could point to some ethical challenges particularly linked to bias and conflicts of interest. Science could be used as a diplomatic tool to mobilize support and resources from varied stakeholders including governments. However, science diplomacy may not always reflect or equate scientific integrity. Further studies that interrogate quality parameters linked to the processes and outcomes of scientization in IOs are thus needed before making compelling assertions of this kind.

### **Toward a Conceptual Model of Scientization**

As the foregoing discussions indicated, there is a clear lack of studies that employ theoretically-informed multifaceted dimensions and indicators of scientization in IOs. Drawing on the foregoing discussions, a generic conceptual framework of scientization is proposed to improve our understanding of this fast-emerging phenomenon, see Figure 1 below. The framework identified indicators of scientization as well as its rationales and expected goals. The indicators are linked to the various epistemic activities of IOs and the support structures and dissemination mechanisms put in place.

The fundamental assumption the conceptual framework holds is that scientization can be considered as a primary strategy for organizational work if it aligns with organizational mission, policies, strategies, laws, and guidelines; if there is substantial research funding (conducted or sponsored), and if organizations have researcher and or analyst positions. Scientization is justified from the point of view of supporting evidence-based decision making leading up to capacity building of stakeholders including ministries of education and ensuring impact. It consequently ensures the social relevance and significance of IOs. This purely

applied research trajectory in IOs seems generally consistent with such emerging knowledge production cultures as epistemic cultures (Knorr Cetina, 2007), Mode 2 (Gibbons et al., 1994; Nowotny et al., 2001, 2003; Marton, 2005), and Mode 3 (Barnnet, 2004; Carayannis & Campbell, 2006; Rhoades & Slaughter, 2006) discussed in the previous section. However, scientization in IOs is also used to maintain organizational legitimacy and credibility, which in turn are employed to globally transfer policy ideas.

Other indicators include a presence of dedicated research and or policy offices, facilities, or units within organizations; existence of scientific advisory board or council; partnerships with research organizations or institutions; formal courses and trainings; publications (articles, policy briefs, books and book chapters, evaluation reports, guidelines, toolkits, indicators), and other dissemination channels including social media and conferences. The mechanisms IOs use to globally transfer their evidence-based policies and strategies are also essential indicators of scientization. As explained below, both consensus- and power-driven mechanisms are used for the global transfer of expert ideas or scientific knowledge. They are disseminated as discourses and projects employing such techniques and tactics as harmonization, standardization, otherhoods, reception, translation, and imposition, see the below section for detail. Depending on circumstances, IOs can resort to hard, soft, and epistemic governance. All these are considered as the essential indicators of scientization in IOs.

In Figure 1, the single-headed arrows that point to the center indicate that clearly articulated goals, research focus, knowledge dissemination strategies, mechanisms of global transfer of expert ideas/knowledge, and support structures directly affect the process, output, and outcomes of scientization. The double-headed arrows indicate the presence of a complex relationship among the various elements, and each affects the other continuously. On the other hand, if a noticeable progress is made because of scientization, all the elements may be positively affected, as indicated by the dashed arrows which spread from the centre. Generally, scientization in IOs manifests itself in the five elements or dimensions maintained in the figure. This conceptual framework is grounded on the tenets of institutional theories and conceptions of policy making and its global transfer.

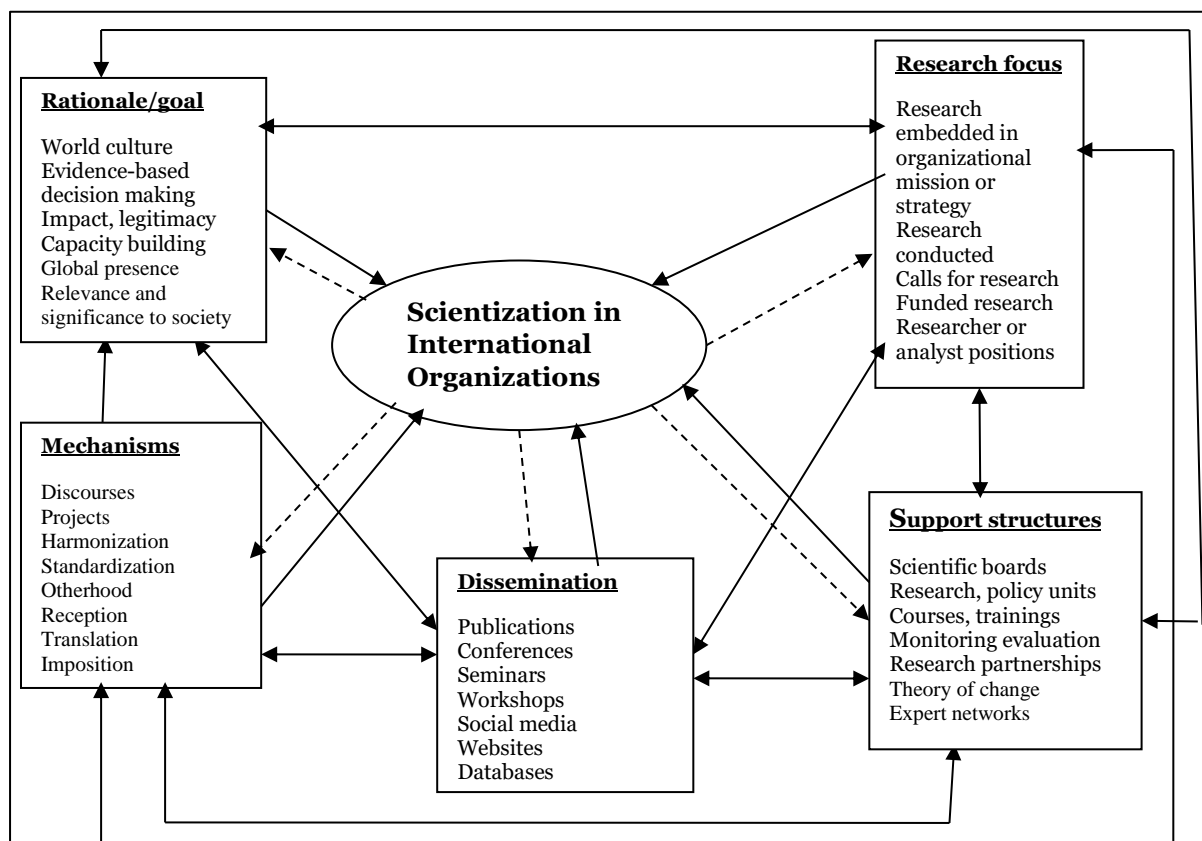
### **Theoretical Explanations of Scientization**

Drawing on sociological theories and conceptions of policy making and its global transfer, this section sustains discussions linked to the why and how of scientization in IOs, with a focus on the latter. The intention is to offer theoretical interpretations of scientization.

Sociological institutional theories, particularly of the phenomenological version (Meyer, 2009, 2010; Wiseman et al., 2016) seem to offer compelling macro-level explanations for scientization in IOs. Institutional theories maintain that such elements of the world society as the UN and its specialized agencies, nation states, associations and organizations, social movements, and sciences and professions hold a shared cultural conception of society (Meyer, 2009, 1997). The world society is also conceived as ‘stateless’, which begs for and legitimizes the formation of expanded actorhoods (Meyer et al., 1997; Meyer, 2010) such as IOs. As IOs are “directly mandated by states to administer and facilitate multilateral cooperation in the field of education that states could not otherwise realize on their own” (Niemann & Martens, 2018: p. 268), properties of nation states could partly be considered as properties of IOs.

Consequently, such concepts of institutional theory as organizational isomorphism, decoupling, expansive structuration, otherhood, and scientization and rationalization (Meyer et al., 1997; Meyer, 2010) explain the prominent emergence of IOs as expert communities.

Figure 1. Conceptual framework of scientization in IOs



Source: Author's construction based on literature

These concepts seem to partly explain the validity of IOs generally and their scientization efforts specifically. First, due partly to their ownership of and then voluntary subscription to such global regimes as the EFA, MDGs, and now the SDGs, nation states and IOs become increasingly isomorphic, having similar or comparable ambitions and structures (Meyer, 2010). They seem to hold shared understandings of nature, society, humanity, education, development, and sustainability. Scientization and rationalization of organizational work is thus considered as a vital tool for staying competitive and relevant at the global level. Scientization could thus be considered and discussed within larger discourses of the knowledge society and economy. However, isomorphism does not necessarily imply organizational homogeneity (Dale, 1999; Wiseman et al., 2014), as IOs still feature qualitatively distinct cultures and forms of operation. The World Bank and the OECD, for instance, are positioned to prioritize human capital thinking in their operations whereas the UNESCO primarily concerns itself with human right approaches and discourses. Scientization could thus methodically embody and 'translate' organizational ideology.

Second, there exists a "disjunction between preferred actor identities and the practical activities" (Meyer, 2010, p. 13). World models such as the EFA and the SDGs are elaborated

beyond the socio-economic, cultural, technological, and governance capacities and readiness of nation states which justifies the establishment and scientization of IOs. The validity of IOs as expert communities is partly justified from the point of view of narrowing the policy-practice gap regarding development and sustainability. Scientization is also justified from the point of view of filling in the epistemological gap- to better inform decision making through the production of expert knowledge.

Three, the proliferation of actor strategies, structures, arrangements, and mechanisms at various levels is a function of 1) the stateless nature of world society, and 2) the perceived or actual disjunction between policies and practices (Meyer, 2010). As indicated in Figure 1 above, IOs establish an expanse of structures to support scientization. Scientific boards or councils, research and policy units, courses and trainings, monitoring and evaluation systems, and their branch offices located across continents and countries are powerful indicators of expansive structuration in IOs intended to support and sustain scientization.

Four, institutional theory posits that “modern actors themselves often posture as Others, giving disinterested advice based on general principles, and de-emphasizing their own status as interested actors” (Meyer, 2010, p. 7), and Others are “desperately needed to provide instruction, consulting, and repair, as every actor requires help living up to expanded standards” (Meyer, 2010, 14). The decoupling between ambitions and practices encourages the enrolment of other actors. Hence, IOs are of Otherhoods themselves, as the absence of a world polity or state coordinating development at the global level invites and justifies their establishment, and as they are enrolled by nation states to narrow the policy-practice gap. As indicated in Figure 1, collaborations and partnerships with research universities and other expert networks at the global, regional/continental, and national levels including ministries of education are indicators of scientized otherhoods.

Five, as discussed above, the “authority of science to address all sorts of questions has expanded remarkably” (Meyer, 2010, p. 8). Scientization in IOs seems ubiquitous; it contributes to organizational isomorphism and is employed to reduce decoupling effects- to narrow the policy-practice gap. Organizational structures and support systems as well as their external collaborations and partnerships also center around maximizing their scientization efforts. This reliance on scientization “provides a basis for legitimated cooperation and social control everywhere” (Meyer, 2010, p. 8). As Figure 1 indicated, scientization is justified by resorting to arguments linked to world culture, evidence-based decision making, capacity building, impact, and organizational legitimacy and credibility. All these seem to, in the end, improve the relevance and significance of IOs to world society.

Some of the research outputs of leading multilateral organizations could be briefly mentioned to exemplify their scientific impact worldwide. As the EU, OECD, World Bank, and the UNESCO are the four key IOs in the field of global educational development (Lee & Friedrich, 2011), their seminal scientific outputs are briefly highlighted here.

The World Bank rate of return studies (e.g. its 1986 seminal publication titled *Financing education in developing countries*) advocated for major public investment for basic education. The Bank’s later publications (e.g. *Knowledge for development*, 1999; *Higher education in developing countries: Peril and promise*, 2000; *Constructing knowledge societies: New challenges for tertiary education*, 2002) acknowledge more public spending on higher education, as the rate of return was lately found to be higher for this level than for basic

education. These publications led to policy preferences which contributed to the revitalization and massification of higher education in many countries. On the other hand, OECD's Program for International Student Assessment (PISA) and associated studies stimulated and influenced policy making and educational reform worldwide (Breakspear, 2012; Wiseman, 2013). UNESCO published the popular EFA Global Monitoring Report annually (2002 – 2015), which was renamed in 2015 as the *Global Education Monitoring Report*. In a bid to better inform policy making, planning, and practice, the publications outlined progress made and challenges faced globally in meeting the 2015 and now 2030 education ambitions. The EU's Bologna Declaration has already created a harmonized European higher education area, which is gaining traction in other regions, including Africa. These are but a few of the scientization efforts of some leading IOs which directly affected policy reforms internationally.

The ways or mechanisms through which outputs of scientization are disseminated worldwide is equally important and interesting for comparative scholarship. As indicated in the previous section, IOs cannot rely on binding laws to disseminate and practice their policy ideas or strategies; they rather resort to soft power. Scientific knowledge is invoked to justify their decisions and policy preferences. Robertson (2012) observed that the global features in national education policy making in different but interrelated ways: as condition of the world (e.g. technology, neo-liberalism- the Washington Consensus), as discourse (e.g. knowledge economy, global village, world society, world culture), as project (e.g. privatization, decentralization, EFA, MDGs, and now SDGs), and as scale (e.g. platforms to advance ideas such as conferences, workshops, seminars). Similarly, Dale (2007) identified such externally influenced mechanisms of global policy movements as harmonization (e.g. the EU Bologna declaration), dissemination (e.g. OECD PISA indicators), standardization (e.g. UNESCO EFA, SDGs), and interdependence (e.g. climate change, environment, sustainability, human rights, terrorism). Depending on circumstances, IOs employ these soft mechanisms to globally transfer their scientized policies and strategies.

It is also relevant to briefly discuss how countries are borrowing ideas or learning from IOs. A common observation is that national education authorities tend to follow the normative approach to policy borrowing and lending. They justify their choices by resorting to the ideas of best practices or successful models (Steiner-Khamsi, 2014). This approach partly indicates that while policy ideas emerge from scientific (analytic) research, its global transfer or dissemination may use a combination of normative and analytic approaches and mechanisms. The underlying logic remains the same however, that world society is conceived as a cultural society (as in Meyer, 2009, 2010) enabling a shared basis of understanding about society, development, and sustainability.

Although nation states and IOs hold similar conceptions of society, development, and sustainability, the former does not always passively receive or borrow policy ideas from the latter. Countries can engage in a methodical examination of their actual needs and challenges and consider the relevance and significance of world cultures or global regimes. In this case, policy translation, not reception, is the preferred strategy of learning from the global (Steiner Khamsy, 2014). This analytical approach considers the fact that “the local context is key to understanding why policies are borrowed (externalization), how they are locally modified and implemented (recontextualization), and what impact they have on existing structures, policies, and practices (internalization)” (Steiner-Khamsi, 2014 p. 162). The global regimes such as the

EFA and SDGs explicitly indicate the possibility and relevance of recontextualization and internalization when planning and implementation at the national level. However, countries are obliged to include global regimes in their national plans and strategies, and they are expected to submit annual reports to the UNESCO outlining progress made and challenges faced. This might be tantamount to a soft form of policy imposition by the global on the national.

However, world society theory “has paid much less attention to the development of IOs as scientific authorities. The tradition has emphasized scientization of IOs as a part of a more widespread intensifying trend of scientization permeating the world society” (Rautalin et al., 2021, p. 5). Shared world cultures and consensus-building do not seem to be the only mechanisms available for the global transfer of expert ideas. There also exists externally influenced mechanisms of policy borrowing and learning, imposition (Dale, 2007). Powerful IOs set preconditions for granting loans and aid to ministries of education. A typical example of this sort is the infamous IMF and World Bank structural adjustment policies of the 1980s, which required countries to embark on ambitious privatization and decentralization projects. These policy prescriptions were communicated to customer countries as results of scientific research. As indicated in the introduction section, this strategy of policy idea transfer is dubbed as hard or financial governance.

Consequently, although consensus building seems to generally drive the conception and practice of global models, not all countries and organizations have equal opportunities for making decisions. Depending on circumstances and type of policy ideas, IOs can combine hard, soft and epistemic governance models to maximize their impact and legitimacy. Even world society theory acknowledges that embracing science and rationalization in agentic actorhood “provides a basis for legitimated cooperation and social control everywhere” (Meyer, 2010, p. 8). Powerful countries and IOs seem to have the financial and cultural capital needed to initiate policy agendas, draft policy ideas, and transfer policies and strategies globally. This seems consistent with the tenets of world systems theory (Wallerstein, 1974). Accordingly, there are some core and many periphery countries and organizations in world polity; the former makes policies and transfers them globally whereas the latter receives and practices them. This power imbalance between the core (such as powerful Western countries and IOs) and the periphery (such as most countries in the Global South) is usually attributed to the fact that the former amass financial/economic, cultural, and intellectual capital accumulated over time.

This seems valid even when we consider global regimes, which are technically supposed to be all-inclusive and participatory. The 1990 World Congress on Education for All was organized and sponsored by leaders of UNESCO, the World Bank, UNICEF, and the UNDP (Chabbott, 2003). The Declaration of Education for All and the Framework for Action for Education for All were the products of the Congress. Although hundreds of countries and IOs were considered makers and owners of the global education regime, not all had an equal opportunity of identifying agendas and selecting policy suggestions. This could be part of the reason why EFA is perceived as a «distillation of Western enlightenment ideas about progress and justice» (Chabbott, 2003, p. 2). Lee and Friedrich (2011) also maintain that “many of these international organizations have worked ... to strengthen the global hegemony of the developed North over the comparatively underdeveloped South” (p. 152). After all, science, the scientific method, and mass schooling are Western constructions. Scientization simply perpetuates this

intellectual divide, as much of the knowledge produced in IOs and the resulting policy ideas model Western culture.

## Concluding Remarks

Drawing on sociological theories and conceptions of policy making and transfer, this study problematizes scientization in IOs, focusing on its meaning, purpose, and indicators. In a bid to improve our understanding and inform further research, core substantive, theoretical and methodological issues are examined. A generic conceptual framework of scientization in IOs is proposed and is grounded on major sociological theories and conceptions of policy making and transfer. This is hoped to extend our understanding and to invite further discussions on this fast emerging global phenomenon.

Considering the foregoing discussions, the following tentative conclusions are drawn about scientization in IOs. One, scientization emerges from and operates within the general scientization and rationalization of world society and knowledge economy. Two, such emerging theories in higher education and society as epistemic cultures, Mode 2, and Mode 3 seem to lay the conceptual foundations for the emergence of scientization. Three, scientization is primarily justified by its resolve to solve real societal challenges and needs. Four, scientization is also employed to justify the relevance and significance of IOs to world society, by then boosting their own organizational legitimacy and credibility. Five, although scientization can perpetuate the epistemic gap created between the West and the Global South, it simultaneously aspires to become more inclusive and participatory in its approach. Six, scientization in IOs should not be considered as a threat or even a rival to traditional science practiced by universities; the two are operating within their own unique organizational cultures and affordances.

The aforementioned conclusions can invite further studies and discussions. Empirical and theoretical studies that explore both the process, and outcomes and outputs of scientization in IOs are warranted. Specific areas for study include research ethics, processes and structures put in place for quality and its assurance, and how power manifests itself at various levels. The available scientization literature concerns only a few multilateral organizations including the World Bank, the OECD, and the UNESCO. Studies that explore scientization in other intergovernmental and non-governmental organizations could substantially contribute to our understanding and then theorization of global governance and international development.

## References

- Alexander, N. (2002). *Paying for education: How the World Bank and IMF influence education in developing countries*. Research Report, Citizens' Network on Essential Services.
- Barnnet, R. (2004). Learning for an unknown future. *Higher Education Research & Development*, 23(3), 247-260.
- Bartels, I. (2018). Practices and power of knowledge dissemination international organizations in the externalization of migration management in Morocco and Tunisia. *Movements: Journal for Critical Migration Boarder Regime Studies*, 4(1), 47- 6.
- Becher, T. (1981). Towards a definition of disciplinary cultures. *Studies in Higher Education*, 6(2), 109-122.
- Becher, T. (1987). Disciplinary discourse. *Studies in Higher Education*, 12(3), 261-274.

- Bekele, T. A. (2018). Context in comparative and international education studies. In A. W. Wiseman (Ed.), *Annual review of comparative and international education 2017: International perspectives on education and society*, Vol. 34 (pp. 275-299). Emerald Group Publishing Limited.
- Bekele, T. A., & Ofoyuru, D. T. (2021). Emerging university-society engagements in Africa: An analysis of strategic plans. *Journal of Comparative and International Higher Education*, 13(1), 151-180.
- Bekele, T. A., Toprak, M., Karkouti, I., & Wolsey, T. (2021). Regional intergovernmental organizations in the Global South: Emerging education policy nodes between the Global and the National. *Educational Policy Analysis Archives*, 29(130), 1-21.
- Breakspear, S. (2012). *The policy impact of PISA: An exploration of the normative effects of international benchmarking in school system performance*. OECD Education Working Paper number 71. OECD.
- Broome, A., Homolar, A., & Kranke, M. (2018). Bad science: International organizations and the indirect power of global benchmarking. *European Journal of International Relations*, 24(3), 514-539.  
<https://doi.org/10.1177/1354066117719320>
- Carayannis, E. G.t, & Campbell, D. F. J. (2006). ‘Mode 3’: Meaning and implications from a knowledge systems perspective. In E. G., Carayannis & D. F. J. Campbell (Eds.), *Knowledge creation, diffusion, and use in innovation networks and knowledge clusters: A comparative systems approach across the United States, Europe, and Asia* (pp. 1-25). Praeger.
- Carayannis, E. G., & Campbell, D. F. J. (2012). *Mode 3 knowledge production in quadruple helix innovation systems: Twenty-first-Century democracy, innovation, and entrepreneurship for development*. Springer.
- Carnoy, M. (1999). Globalization and educational reform: What planners need to know. *Fundamentals of Educational Planning*. International Institute for Educational Planning, UNESCO.
- Castells, M. (2000). *The rise of the network society*. Vol. 1. (2nd ed.). Blackwell Publishers.
- Castells, M. (2001). Universities as dynamic systems of contradictory functions. In J. Muller et al. (Eds.), *Challenges of globalisation: South African debates with Manuel Castells* (pp. 206-223). Maskew Miller Longman.
- Chabott, C. (1998). Constructing educational consensus: international development professionals and the world conference on education for all. *International Journal of Educational Development*, 18(3), 207-218
- Chabbott, C. (2003). *Constructing education for development: International organizations and education for all*. Routledge Falmer.
- Christensen, J. (2018). Economic knowledge and the scientization of policy advice. *Policy Science*, 51, 291-311.  
<https://doi.org/10.1007/s11077-018-9316-6>
- Clark, B. R. (1987). *The academic profession: National, disciplinary and institutional settings*. University of California press.
- Dale, R. (2007). Specifying globalization effects on national policy: a focus on the mechanisms. In B. Lingard, & J. Ozga (Eds.), *The Routledge Falmer Reader in Education Policy and Politics* (pp. 46 -64). Routledge.
- Dale, R. (1999). Specifying globalization effects on national policy: a focus on the mechanisms. *Journal of Education Policy*, 14(1), 1-17.
- Drori, G. S., & Meyer, J. W. (2006). Global scientization: An environment for expanded organization. In G. S. Drori, G. S., J. W. Meyer, & H. Hwang (Eds.), *Globalization and organization: World society and organizational change* (pp. 50-68), Oxford University Press.
- Etzkowitz, H. (2014). The entrepreneurial university wave: from ivory tower to global economic engine. *Industry and Higher Education*, 28(4), 223-232.
- Etzkowitz, H., & Leydesdorff, L. (2000). The dynamics of innovation: From national systems and “Mode 2” to a triple helix of university-industry-government relations. *Research Policy*, 29, 109-123.
- Francesco, F. (2014). Transfer agents, knowledge authority, and indices of regulatory quality: a comparative analysis of the World Bank and the Organisation for Economic Co-operation and Development. *Journal of Comparative Policy Analysis*, 18(4), 1-16.
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott P., & Trow, M. (1994). *The new production of knowledge. The dynamics of science and research in contemporary society*. Sage Publications Ltd.
- Harber, C. (2014). *Education and international development. Theory, practice and issues*. Symposium Books.



- Hel, S., & Biermann, F. (2017). The authority of science in sustainability governance: a structured comparison of six science institutions engaged with the Sustainable Development Goals. *Environmental Science and Policy*, 77, 211-220. <http://dx.doi.org/10.1016/j.envsci.2017.03.008>
- Heyneman, S. P., & Lee, B. (2016). International organizations and the future of education assistance. *International Journal of Educational Development*, 48, 9-22.
- Jacobi, A. P. (2012). Facilitating transfer: International organisations as central nodes for policy diffusion. In G. Steiner-Khamsi, & F. Waldow (Eds). *Policy borrowing and lending in education* (pp. 391-407). Routledge.
- Jones, P. W. (2004). Taking the credit: Financing and policy linkages in the education portfolio of the World Bank. In G. Steiner-Khamsi (Ed.). *The Global politics of educational borrowing and lending* (pp. 188-199). Teachers College.
- Jones, P. W. (2007). *World Bank financing of education: Lending, learning and development*. Taylor & Francis Group.
- Jones, P. W., & Coleman, D. (2005). *The United Nations and education multilateralism, development and globalization*. Routledge Falmer.
- Kendall, N. (2009). International development education. In R. Cowen, & A. M. Kazamias (Eds.), *International handbook of comparative education* (417-435). Springer Science + Business Media.
- King, K. (1991). *Aid and education in the developing world: The role of donor agencies in educational analysis*. Longman.
- Knorr Cetina, K. (1999). *Epistemic cultures: How the sciences make knowledge*. Harvard University Press.
- Knorr Cetina, K. (2007). Culture in global knowledge societies: Knowledge cultures and epistemic cultures. *Interdisciplinary Science Reviews*, 32(4), 361-375.
- Lee, M., & Friedrich, T. (2011) Continuously reaffirmed, subtly accommodated, obviously missing and fallaciously critiqued: Ideologies in UNESCO's lifelong learning policy. *International Journal of Lifelong Education*, 30(2), 151-169.
- Mahon, R., & McBride, S. (2009). Standardizing and disseminating knowledge: the role of the OECD in global governance. *European Political Science Review*, 1(1), 83-101.
- Marton, S. (2005). Academics and the Mode 2 society: Shifts in knowledge production in the humanities and social sciences. *Governing Knowledge*, 169-188.
- Menashy, F., & Read, R. (2016). Knowledge banking in global education policy: A bibliometric analysis of World Bank publications on public-private partnerships. *Education Policy Analysis Archives*, 24(95). <http://dx.doi.org/10.14507/epaa.24.2523>
- Menashy, F., & Shields, R. (2017). Unequal partners? networks, centrality, and aid to international education. *Comparative Education*, 53(4), 495-517.
- Meyer, J. W. (2009). Reflections: institutional theory and world society. In G. Kruecken, & G. Drori (Eds.), *World society: the writings of John W. Meyer* (pp. 36-63). Oxford University Press.
- Meyer, J. W. (2010). World society, institutional theories, and the actor. *Annual Review of Sociology*, 36, 1-20.
- Meyer, J. W., Boli, J., Thomas, G. M., & Ramirez, F. O. (1997). World society and the nation-state. *American Journal of Sociology*, 103(1), 44-181.
- Moos, L. (2009). Hard and soft governance: the journey from transnational agencies to school leadership. *European Educational Research Journal*, 8(3), 397-406. <https://doi.org/10.2304/eeerj.2009.8.3.397>
- Moutsios, S. (2009). International organizations and transnational education policy. *Compare: A Journal of Comparative and International Education*, 39(4), 469-481.
- Mundy, K. (2002). Education in a reformed World Bank. *International Journal of Educational Development*, 22(5), 483-508.
- Mundy, K. (2006). Education For All and the new development compact. *Review of Education*, 52, 23-48.
- Niemann, D., & Martens, K. (2018). Soft governance by hard fact? The OECD as a knowledge broker in education policy. *Global Social Policy*, 18(3), 267-283. <https://doi.org/10.1177/1468018118794076>
- Nowotny, H., Scott, P., & Gibbons, M. (2001). *Re-thinking science. Knowledge and the public in an age of uncertainty*. Polity, Cambridge.
- Nowotny, H., Scott, P., & Gibbons, M. (2003). Introduction: 'Mode 2' revisited: the new production of knowledge. *Minerva*, 41, 179-194.

- Nowotny, H., Scott, P., & Gibbons, M. (2006). Rethinking science. Mode 2 in societal context: Knowledge creation diffusion and use in innovation networks and knowledge clusters. A comparative systems approach across United States. *Europe and Asia*, 39-51.
- Rautalin, M., Syväterä, J., & Vento, E. (2021). International organizations establishing their scientific authority: Periodizing the legitimation of policy advice by the OECD. *International Sociology*, 36(1), 3–24.
- Rhoades, G., & Slaughter, S. (2006). Mode 3, academic capitalism and the new economy: Making higher education work for whom? In V. P. J. Tynjälä, & G. Boulton-Lewis (Eds.), *Higher education and working life-collaborations, confrontations, and challenges* (pp. 9–33). Elsevier Ltd.
- Robertson, S. L. (2012). *Researching global education policy: Angles in/on/out. The Centre for globalization, education and societies*. <http://susanleerobertson.com/publications/>.
- Sandstrom, G. (2014). Higher education and science for development: The historical and conceptual foundations of Mode 3 knowledge. *Education Sciences & Society*, 1, 15-44.
- Sellar, S., & Lingard, B. (2014). The OECD and the expansion of PISA: New global modes of governance in education. *British Educational Research Journal*, 40(6), 917-936.
- Shahjahan, R. A. (2010). The roles of international organizations (IOs) in globalizing higher education policy. In J. C. Smart & M. B. Paulsen (Eds.), *Higher education: handbook of theory and research* (pp. 369-407). Springer Science and Business Media.
- Singh, J. P. (2011). *United Nations Educational, Scientific and Cultural Organization (UNESCO). Creating norms for a complex world*. Routledge.
- Slaughter, S., & Rhoades, G. (2004). *Academic capitalism and the new economy: Markets, state, and higher education*. The Johns Hopkins University Press.
- Stark, J. S., Lowther, M. A., Hagerty, B. M., & Orczyk, K. (1986). A conceptual framework for the study of preservice professional programs in colleges and universities. *The Journal of Higher Education*, 57(3), 231-258.
- Steiner-Khamsi, G. (2014). Cross-national policy borrowing: understanding reception and translation. *Asia Pacific Journal of Education*, 34(2), 153-167.
- Wallerstein, I. (1974). *The modern world system* (Vol. 1). Academic Press.
- Wiseman, A. W., Pilton, J., & Courtney Lowe, J. (2010). International educational governance models and national policy convergence. In K. Amos (Ed.), *International Educational Governance (International Perspectives on Education and Society, Vol. 12)*, Emerald Group Publishing Limited, Bingley, pp. 3-18. [https://doi.org/10.1108/S1479-3679\(2010\)0000012004](https://doi.org/10.1108/S1479-3679(2010)0000012004)
- Wiseman, A. (2013). Policy responses to PISA in comparative perspective. In H. D., Meyer, & A. Benavot (Eds.), *Pisa, power, and policy: The emergence of global educational governance* (pp. 303-322). Symposium Books.
- Wiseman, A. W. Astiz, M. F., & Baker D. P. (2014). Comparative education research framed by neo-institutional theory: a review of diverse approaches and conflicting assumptions. *Compare: A Journal of Comparative and International Education*, 44(5), 688-709.
- Wiseman, A., Damaschke-Deitrick, L., & Bruce, E., Davidson, P., & Stevens, T. C. (2016). Transnational scientized education discourse: A cross-national comparison. In J. Schmid, K. Amos, J. Schrader, & A. Thiel (Eds.), *Internationalisierte Welten der Bildung: Bildung und Bildungspolitik im globalen Vergleich* (pp. 121-146). <https://doi.org/10.5771/9783845265186-121>
- Zapp, M. (2017). The World Bank and education: Governing (through) knowledge. *International Journal of Educational Development*, 53, 1-11.
- Zapp, M. (2018). The scientization of the world polity: International organizations and the production of scientific knowledge, 1950–2015. *International Sociology*, 33(1), 3-26.
- Zapp, M. (2020). The authority of science and the legitimacy of international organisations: OECD, UNESCO and World Bank in global education governance. *Compare: A Journal of Comparative and International Education*, 51(7), 1022-1041. <https://doi.org/10.1080/03057925.2019.1702503>