Knowledge Transfer

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Definition

Despite its ubiquity, the term *knowledge transfer* lacks a clear and agreed-upon definition. Broadly speaking, it refers to the diffusion of knowledge as a "process of communicating research, innovations and knowledge to individuals, groups or organizations" (Thompson et al. 2006, 91). The etymological roots of the term are both Greek and Latin. *Knowledge* refers to the ancient Greek γνῶσις (gnōsis), which meant knowing through observation or experience. Transfer consists of the two Latin words trans, which means "across" or "beyond", and the verb *ferre*, which stands for "to bear" or "to carry, to bring" (Lewis and Short 2020, 428 and 1097). The literal translation refers to an activity of carrying knowledge between and beyond the places where it is produced.

The term *knowledge transfer* evades a clear-cut definition as neither the boundaries that knowledge has to cross nor the pathways along which knowledge can be "moved" are clearly defined. Naïve depictions of knowledge portray it as a kind of weightless entity that – in contrast to goods – can transgress physical and ideological boundaries and thus improve people's lives. Such romantic conceptions fail to acknowledge power imbalances and hierarchies within science and between science and societies, which pose considerable obstacles to transferring knowledge (Ruser 2021a).

Knowledge transfer can occur within scientific communities as the exchange of research findings, methodological innovation and theoretical debate, or the transmission of knowledge between researchers and distinct political, social, or economic environments. In the first case, knowledge transfer is an essential aspect of inter- or transdisciplinary research. In the latter case, it is addressed as the cornerstone of the universities' *Third Mission*, which is the "generation, use, application and exploitation of knowledge and other university capabilities outside academic environments" (Molas-Gallart et al. 2002, iii).

Analytically, functional and normative approaches to knowledge transfer can be distinguished (Ruser 2021b). Functional approaches tend to emphasize the im-

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portance of rules for transmitting knowledge, the significance of curricula and the need to agree upon standards. Functional approaches regard the transfer of knowledge within and beyond academia as an indispensable prerequisite for maintaining, controlling, and advancing knowledge. Accordingly, the transfer of knowledge needs to be organized in ways that allow for the dissemination of knowledge between places and across generations to guarantee the best application of available knowledge and the further advancement of that knowledge.

Normative approaches emphasize the importance of sharing and advancing knowledge as a basic human need. While scholarly thought tended to root this human need in ideas of European enlightenment, frequently invoking Immanuel Kant's call to emerge from "self-imposed immaturity" (Kant 2009, 1), more recently, the acknowledgment of the significance of non-Western and indigenous knowledge has gained importance (Adeyeye 2019; Al-Roubaie 2010).

In modern "knowledge societies" (Stehr 1994), knowledge is increasingly depicted as essential for economic growth and social and political inclusion. Consequentially, training and research facilities such as schools and universities become crucial determinants for a society's ability to remain competitive and develop knowledge-based and knowledge-driven economies. Likewise, more recent research has identified knowledge as an essential driving force of development while pointing out that low-income countries in the Global South, particularly in sub-Saharan Africa, struggle to put their domestic universities in a position to contribute to national development (Kruss et al. 2012). This apparent failure of transferring knowledge from the laboratories, academic hallways, and lecture theatres to broader society cannot be reduced to a lack of resources but often indicates a more general mismatch between academia and society (Kruss et al. 2012, 523–24), a lack of interaction or understanding between scientific and non-scientific communities.

Background

How can and how should knowledge be transferred? These questions have been a primary concern for centuries and has led to the development of specialized institutions and distinct social rules for how and to whom knowledge should be transferred. Moreover, the transfer of knowledge poses technical challenges and is inherently political. Current debates about the role of scientific and technical knowledge in transforming economies and societies, for instance, are implicitly or explicitly rooted in a Western understanding of scientific research. Likewise, the *politics* of enabling knowledge transfer – for instance, the "modernization" of curricula, the strengthening of relations between academic research or teaching and the wider society, and the encouragement of private–public partnerships to

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foster the co-creation of knowledge and life-long learning – are more often than not modeled after European or North American practices. The dominance of hegemonic, Western "specific forms of knowledge and knowledge production" (Okolie 2003, 235) and their impact on higher education and science politics in developing countries have increasingly drawn criticism from scholars from the Global South. Moreover, knowledge transfer and the "scholars, intellectuals, experts, and researchers implicated in the universalization of the dominant Euro-American knowledge" (Okolie 2003, 236) have been identified as important sources for the perpetuation of global power imbalances (Connell et al. 2017; Noda 2020).

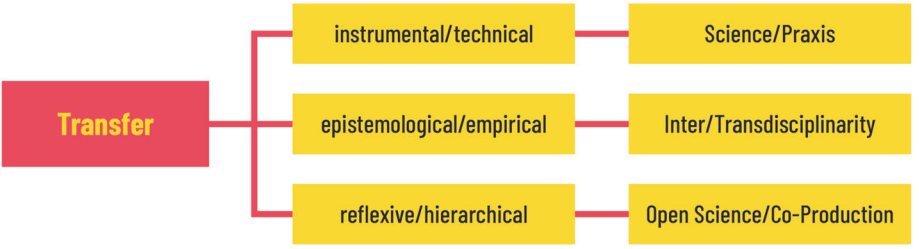
Debate and criticism

Current debates about and criticism of the dominant understanding of knowledge transfer begin to touch upon the inherent power imbalances and criticize the dominance of specific cultural understanding of both critical terms, *knowledge* and *transfer*.

It is fruitful to make an analytical distinction between the three critical dimensions around which the debates evolve in order to better understand what drives current debate and to disentangle political and structural aspects of it. Moreover, such a systematization allows differentiation between three distinct thresholds knowledge must cross to transfer. This theoretical distinction enables a differentiated debate about how technical and cultural factors relate and how they contribute to or hinder distinct types of knowledge transfer.

As displayed in Figure 1, the analytical model distinguishes between three different conceptualizations of knowledge transfers. First, it can be understood as an instrumental and technical problem. Second, it can pose an epistemological and empirical challenge or, thirdly, it can be approached as mainly a reflexive and hierarchical task.

Figure 1: Categories of knowledge transfer. Source: Ruser 2021b, 410.



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The instrumental and technical perspective focuses on transfer problems between "science" and "practice". It thus directly follows the demarcation of scientific knowledge production from other areas of society, such as commercial research and development activities or analyses conducted by governments or NGOs. Moreover, the underlying understanding of science implicitly reflects Robert Merton's understanding of a scientific ethos made up of four overarching norms: universalism, communality, disinterestedness, and organized skepticism (Merton 1973, 270). The normative structure of science, however, reflects the historical developments and value judgments that led to the emergence of Western science.

Consequentially, transfer issues have been located in and explained by discrepancies between these core values of the scientific ethos and normative concepts predominant in the surrounding societies. The organized skepticism of scientists, for instance, was (and is) at odds with religious convictions which are based on absolute, eternal truths. Accordingly, transferring scientific knowledge (for instance, about the origin and evolution of species) runs into obstacles when the receivers of the transfer hold contradictory beliefs (for instance, Christian ideas of God's creation).

Subsequently, the *impact* of transferred knowledge is conceptualized as a linear relation in which science transforms established practices. The in-principle compatibility between scientific insights (new knowledge) and social practices (sedimented knowledge) is assumed. Accordingly, prime examples of this perspective of knowledge transfer problems include questions of how to improve social organization, implement scientific findings into practice, to professionalize science communication further, or to establish executive education courses to shorten the time lag between "discovery" and "application".

The second epistemological and empirical perspective focuses on transfer problems *within* academia and scientific communities. The primary transfer arena is between scientific discipline and research fields, with "translation problems" posing the most important practical questions. In this interdisciplinary understanding, the main challenge is to guarantee or sustain the mutual ability of contributors from different disciplines and backgrounds to connect and collaborate. Solutions to these – often considerable – challenges are believed to depend on reforms in the academic context of knowledge production. Institutional reform to break down the silos of academic disciplines and the encouragement of new interdisciplinary thinking within academic communities are often seen as crucial components in overcoming translation problems (Townsend et al. 2015).

However, such perspectives can be criticized on two grounds – first, their neglect of historical developments and traditions in science. The establishment of disciplinary boundaries was an achievement in the development of modern universities and reflected a certain degree of definitional sovereignty of the respective field of research. Moreover, it also expresses the claim to autonomy concerning the transmission of knowledge. The canonization of classical theories, ac-

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cepted methods, and central questions was key for the formation of disciplinary scientific communities since it allowed for establishing rules and agreed-upon regulations about what newcomers to the discipline had to learn, which knowledge they had to command, and what exams they had to pass in order to become an accepted member of the respective community (Stichweh 1992).

The second criticism focuses on the lack of awareness of the cultural distinctiveness of the premises of interdisciplinary knowledge transfer. The depiction of the emergence of academic disciplines as an indicator of increasingly differentiated scientific autonomy is plausible for the educational systems in Central European and North American countries. In many developing countries, educational systems were modeled after the examples of former colonial overlords, thus reflecting the academic understanding, rules, and agreed-upon regulations of others.

For universities in the Global South, current calls for more interdisciplinary research (Townsend et al. 2015) and learning as a form of more efficient knowledge sharing within academic contexts thus represents a double-edged sword. Universities in developing countries are still striving to establish binding norms of academic freedom and disciplinary autonomy that correspond with local rather than colonial ideals of organizing higher education and research. International calls for rearranging disciplinary context to improve knowledge transfer are thus not seen as "some neutral, apolitical technical" (Tabulawa 2017, 13) invitation to reform domestic higher education systems but as an expression of a more comprehensive neoliberal agenda to globalize a narrow, instrumental understanding of knowledge and its transfer (Tabulawa 2017).

From this perspective, knowledge transfer is rooted in the idea that disciplinary boundaries can be overcome, and new forms of scientific research and innovative new academic practices can be established (Mittelstraß 1987, 2005, 19). A crucial aspect of breaking down disciplinary barriers and establishing new practices is the emphasis on the *reflexive* character of knowledge transfer. Transdisciplinary thinking cannot be limited to scientific communities. As the boundaries between scientific disciplines fade, the distinction between academic and non-academic scientific knowledge production becomes more blurred, as does the differentiation between knowledge production and knowledge transfer itself.

This last depiction might be the most promising for catching the intricacies and particularities of knowledge transfer challenges in non-Western and postcolonial contexts: Drawing on debates about "post-normal science" (Ravetz 1999, 647), scientific knowledge is conceived as "deeply enmeshed" in social debates (Ravetz 1999, 647) and thus a reflection of distinct cultural, political, and historical circumstances. Accordingly, and in sharp contrast to the first reading of the transfer problem, transferring scientific knowledge cannot be compared to shipping a fixed and finished product of a research process. Knowledge transfer is instead depicted as a process of mutual, collaborative exchange, the fabrication of

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agreed-upon ways of conceptualizing problems and sense-making. Accordingly, the demarcation between scientific and non-scientific agents of knowledge production, producers and receivers of knowledge, and the distinction between scientific research and lived practices loses importance.

Current forms of implementation in higher education

Transferring knowledge takes place in specific contexts and, as outlined above, requires access to target groups and a way of breaking down knowledge to make it accessible. Respective projects in the Global South face peculiar, additional hurdles since educational systems often retain colonial heteronomy characteristics. Intended to serve the interests of colonial masters, education systems in large parts of Africa were designed to train office assistants who would help in the operations of the colonial administration. However, in a limited sense, knowledge transfer was at the center of such other-directed educational institutions, as educated locals were trained to act as translators between the administration and indigenous groups or to serve as clerks for bookkeeping and general upkeep of colonial offices.

These historical roots create severe problems for knowledge transfer today. First, the narrow orientation and lack of independent development of disciplinary self-images create a mismatch between curricula – which are still borrowed from former colonial powers and the current domestic economic and social needs. For example, in Ghana, despite a large number of university graduates, many companies recruit foreign labor to fill certain positions where there is a lack of local expertise. Likewise, the peculiar relationship between academic research, higher education, and praxis and the lack of independent, emancipatory disciplinary development (Nukunya 2003) continue to hamper knowledge transfer. To overcome these obstacles to transferring academic knowledge into practice, important research initiatives have started to explore the impact of social networks on knowledge transmission and how graduates find jobs and inject their knowledge into local communities (Dwumah et al. 2018). Moreover, Yang (2018) points out that higher education in East Asia was not only based on Western knowledge for one and a half centuries but is still analyzed and understood through the lens of Western concepts, thus creating a disconnect from local, traditional schools of thought, which in turn limits the exchange of knowledge and knowledge-based practices.

In addition, the instrumental understanding of academic knowledge as a critical tool to solve specific domestic problems increasingly shapes the expectations towards social science research. Thus, scholars orient their research agendas to address concrete political problems such as the "chieftaincy crisis in Northern Ghana" (Anamzoya and Tonah 2016, 255) and offer practical solutions. A similar bias for

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practical problem solving in shaping national research and educational priorities in the social sciences can be found in India, China, and Brazil (Gupta et al. 2009).

Despite many difficulties, initiatives to transfer knowledge from universities to the praxis, such as "Third Trimester Field Practice", established in 1993 at the University for Development Studies in Ghana (Abonyi 2016), facilitate interdisciplinary research on the transfer of academic knowledge into local communities. Sharing the same instrumental and technical understanding of knowledge transfer as Third Trimester Field Practice, universities in the Global South adopt "executive education" schemes. Modeled after American and European business schools, these programs aim to professionalize management and business leadership by providing uniform knowledge packages and standards developed in the Global North and distributing them to domestic contexts (Amdam 2019). Moreover, recent work points to the potential of rediscovering research and knowledge transfer traditions in Latin America which are based on the eradication of the distinction between researchers and researched and can thus widen our understanding of reflexive knowledge transfers (Lomeli et al. 2018).

Attempts to overcome epistemological and empirical divisions include the facilitation of inter- and transdisciplinary learning. Unlike many Western universities, some higher education institutions in the Global South, such as the Kwame Nkrumah University of Science and Technology, have adopted a system of interdepartmental collaboration (Simpson et al. 2008) in the form of so-called "service courses" where different departments introduce students to the basics of their respective fields. The aim is to bridge disciplinary boundaries and find ways to combine different subjects to make university education more relevant to the local context. However, because of the instrumental character of cross-departmental collaboration and since disciplines lack the opportunity to develop strong national identities and a domestic canon of social science knowledge, these attempts run the risk of falling short of achieving transdisciplinary knowledge production and transfer.

Examples of open science and co-production approaches to knowledge transfer in the global south include the implementation of scenario workshops to identify future challenges (Sagasti 2004) and the implementation of living labs, in South Africa (Coetzee et al. 2012) and Indonesia (Supangkat et al. 2020) for instance, to facilitate development and transition to smart cities. However, research on participatory models for knowledge transfer reveals that Western models cannot simply be transferred to different national or cultural contexts. Living labs, as concrete didactical methods for bringing people together, e.g. in South Africa not only have "characteristics unique to the context in which they operate" (Coetzee et al. 2012, 23) but at times violate cultural practices for selecting stakeholders, contradict established norms of knowledge sharing, and thus require a more thorough investigation of the very meaning of knowledge transfer or co-production in non-Western environments (Coetzee et al. 2012, 25).

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The application and the spread of modes and models for transferring knowledge within disciplinary contexts and between science and society tell us very little about the actual content, contexts, and impact of the knowledge transfer. Therefore, an international perspective in knowledge transfer requires not considering contextual factors – such as economic and institutional limitations of educational organizations in the Global South – but taking different, diverging, and potentially conflicting cultural understandings of knowledge and transfer seriously.

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