

2

Knowledge

Knowledge is described, exploited, analyzed, and studied in many different ways. Different scholarly disciplines think of the “stuff” of knowledge through radically different frameworks. Epistemology, sociology, and cultural studies think in distinctive ways about what knowledge is. Communities outside the formal academy, including journalists, industrialists, politicians, policy advocates, and judges as well as different publics, have different understandings of knowledge along with differing expectations of the groups that claim to produce it.

We advocate for universities as OKIs that institutionalize diversity and, working with the broader community, contribute to a common pool resource of knowledge. To imagine universities as open knowledge institutions, we need to discuss these forms of knowledge, leading to the different ways in which knowledge has been conceptualized as a good in the knowledge economy.

In this chapter, we present “knowledge” in various methodological interpretations, particularly from scientific, economic, systemic, and cultural perspectives. While these views do not necessarily coalesce, they present the potentialities and limitations of open knowledge and OKIs in several different lights.

Knowledge and Culture

Information is everywhere. On the basis of its building blocks, we may develop knowledge. Occasionally, some forms of knowledge will be accorded the status of wisdom. More often wisdom is incorporated into implicit (Collins 2010) or “craft” (Ravetz 1971) knowledge of communities. Education deals with existing knowledge and its transmission. Research institutions value new knowledge. To be worthy of a research degree, students are required to make “a genuine contribution to knowledge.” The skills required to produce that contribution are highly prized in themselves as well as in their direct or indirect applications. Culture is essential in determining what knowledge means and who gets to share it (Hartley 2018). One culture’s knowledge may be another’s cultural noise, proving to be meaningless or meaning something quite different in other cultural contexts. Most cultures, however, distinguish formal, certified forms of knowledge—sanctioned by publishing houses, libraries, or national institutions—from informal, unsanctioned forms of knowledge, the most ubiquitous evidence of which can be found in today’s social media.

Knowledge is global. This sometimes brings different knowledge systems into conflict. Different levels within a knowledge system also come into conflict, for example, when the micro (agent/text), meso (institution/discourse), and macro (system/network) levels interact (Knowledge Exchange et al. 2019). As information became capable of instantaneous global transmission with the advent of the telegraph, knowledge also took on more universal characteristics. But as the proportion of populations sharing in that knowledge has grown and accelerated in the last half century, knowledge has tended toward a distinctive bifurcation into “violent-productive” knowledge in contrast to “tribal-connective” knowledge. John Hartley (2018, 28) distinguishes “deep, specialist, expert, disciplinary and literate” productive knowledge, claimable as intellectual property,

from connective knowledge, which is “broad, circulating in everyday language and popular culture, open to everyone.”

While the productive, sanctioned knowledge might once, in the Western tradition, have been written in Latin, the connective type was once only orally communicated in the local vernacular. Now in the age of multimedia, all knowledge types appear across all communication forms. From the perspective of institutions of learning, a huge and unresolved question is how much, and how consistently, unsanctioned (connective) knowledge is relevant to the role of formal (productive) learning or discovery. How much should it be embraced or excluded? This question is particularly challenging for an aspiring OKI with strong foundations in local communities extending beyond the existing, carefully selected elites.

Another way of thinking about knowledge is to distinguish between know-how and know-what. Know-how is frequently less sanctioned and formal, and not a basis of knowledge in traditional universities. Know-what is seen as the basis of scientific knowledge—the building blocks of the scientific method. Indigenous knowledge

Case Study 5

Fake News

Over the past few years, social and mainstream media have been flooded with what a University of Münster study dubs “pandemic populism,” where verifiable news is laced with ideological poison, often pursuing an alt-right political agenda (Boberg et al. 2020; DW 2020). Thus “openness” in science contends constantly with another kind of openness, where freedom of speech serves power plays rather than truth seeking. This is the terrain of “fake news,” on which much has been written in news media and scholarly publications. By this time, fake news is not so much a wrong to be righted or scandal to be exposed as a meme to be deployed by all-too-knowing subjects.

What can an OKI do about it? The answer will depend on the context, but it may include play: “Break your own news: This app is intended for fun, humour and parody—be careful what you make and how it may be shared. You should avoid making things which are unlawful, defamatory or likely to cause distress. Have fun and be kind!” (<https://breakyourownnews.com/>).

Case Study 5 (continued)

The point has certainly been reached when fake news is itself a prime example of fake news. It's hardly worth anyone's further attention to associate it with a given actor (Donald Trump) or agency (CNN). As we write, Google's top suggestions for the search item "fake news" are "game" and "generator"—for users who want to play with the concept, not to have it explained to them. Even Google Scholar suggests "humor," "the onion," and "satire" along with "real" and "journalism." One philosopher has recommended that scholars "stop talking about fake news!" (Habgood-Coote 2019) because its meaning is contested, it's not the best term for "epistemic dysfunction," and its use is generally propagandistic.

If you can't tell what's fake from what's real by checking the identity of the author or outlet, then perhaps the problem lies not so much with the actor or agent but rather with "a more recently popular addition to the tree of binaries": the binary of "real : fake" itself. Journalism scholar Tamara Witschge and her colleagues (2018, 656) have confronted the issue, recommending that we use instead an "*experientialist*" approach that acknowledges that "we *understand* the world through our *interactions* with it," following the germinal work of George Lakoff and Mark Johnson (1980). They recommend a form of openness that admits of new values and knowledge:

Such an answer to the increasing complexity of the social world does not rely on reductionism, but is focused on expansion. It allows us to provide inclusive accounts of this world, messiness and all. In that we may need to develop values that are now perhaps rather marginal if guiding our practices at all, such as doubt, making (and staying with the) trouble, staying present, and being open: "open to the data, open to being wrong, to redoing one's own work, actively to seek out new views and mistakes." (Witschge et al. 2018, 657)

They suggest a practical way "to address this empirical challenge of an experientialist approach is to take *situations* as the unit of analysis, rather than the social actors" (657).

People are used to working within "situations" (Potts et al. 2008), adjusting their understanding of truth and deception through their interactions with the constellation of interlocutors, purposes, and powers in which they find themselves. Social media are no different, and attempts to shame particular sources or speakers as fake can be seen for what they are: a language game.

It is true that in politics, the stakes of such games are high, but that doesn't alter the situation or genre. Contemporary literacy—both digital and social—imposes the need for widespread openness to the skills of situated interpretation. It is clear that popular culture itself is on the case, and institutional reform can learn from it.

can present fundamental challenges in terms of both methodological compatibility and the inclusion or exclusion of audience.

Knowledge as an Economic Good

Knowledge is frequently imagined as an economic good, whereby it is accorded a certain type of value. In particular, it is seen as production, whose inputs can be put to other uses and that requires coordination. The quality of the organization (i.e., the governance and infrastructure of production) and translation of these inputs into outputs are the basis of the economy of knowledge production. There are several institutions engaged in this production, though they differ in how these economic goods are conceived of—variously as private good, public good, club good, and common pool resource.

The production of knowledge is often, mistakenly, thought to be a public good. It is certainly true that new knowledge does have characteristics of a public good, in the technical economic sense of that term. That is, knowledge is expensive to hold exclusively and does not lessen in value when shared. Yet new knowledge also has characteristics of a private good, where exclusion can be created through secrecy, for instance, by simply not telling anyone, or club good, wherein members of privileged groups (e.g., medieval guilds or industry associations, or subscribers to a specific journal) are able to maintain ownership of valuable knowledge.

Notions of ownership oftentimes serve as organizational mechanisms in economies of knowledge, such as markets that are organized around intellectual property rights or the commercialization of knowledge. These are most easily observed in terms of corporate laboratories that are organized primarily around the exploitation of knowledge for financial gain. Private organizations, which operate with knowledge as a private good, are typically controlled through public regulation. Club goods, such as consortia of research

organizations, also rely on governance mechanisms to control access to the “good”—that is, knowledge.

Knowledge can also be organized through the commons, in which knowledge is considered a common pool resource (Ostrom 1990). This is different from knowledge as a private or public good, thus transcending purely economic categories. In a common pool resource, a community comes together to create rules of governance (institutions) for the creation, maintenance, and use of the common pool resource based on mutually shared values and moral commitments. This works through community-created rules, not through legislation, regulation, and public fiscal funding (as in a public good), or markets and hierarchies (as in a private good). Common pool resources are usually difficult to create because governance is hard, but are frequently the most efficient institutional form for the production and consumption of goods under a wide variety of circumstances, superior to both public and private forms of governance.

Knowledge in the Public Interest

In discussing knowledge specifically, but in other cases too, there can be a confusion between the economic language in which it is referred to (incorrectly in our view) as “a public good” and the quite different point of the production of knowledge being “for the good of the public” or in the “public interest.” Approaching knowledge as a common pool resource differs from the economy of knowledge in terms of the role of public interest, as embedded in a community of knowledge producers and users. The theory of social choice has shown that there is no way to aggregate individual interests consistently into one single proposition of public interest. In fact, this requirement would imply that knowing the public interest results in systemic closure. This dilemma has been succinctly analyzed by Amartya Sen (2009) in his *Idea of Justice*, where he provided the

systematic reasons why the public interest can only be defined via a process of deliberation that is as inclusive as possible, and entails a process of forming and transforming individual interests via an open public discourse.

Yet as Sen also has shown, the challenge emerges as to whether we define “public” in the context of local and national societies, or establish a global reference frame. A deliberative process in a rich country might result in the institutional choice to declare the physical comfort of elderly citizens as a public interest (perhaps including certain public national health care services), while at the same time ignoring pressing public health issues in poor developing countries. This problem has been highlighted by global philanthropic initiatives to support research on malaria, for example. It suggests that a system of producing knowledge as a common pool resource must be grounded in an open public dialogue about the adequate forms of institutionalizing it within a specific domain, such as certain areas of public health, pharmaceutical research, and medicine. This requirement is, in turn, based on the idea that the system itself is in the public interest.

This assumption is a value proposition that needs to be put into the perspective that the openness of knowledge can be a private economic good as well; this is often the case in fields of technological innovation where network externalities loom large (e.g., Tesla opening access to large segments of its patents). This does not mean that less access would be in the public interest either. The more fundamental question is whether institutional forms of economization of any kind, private and public, are in the public interest, or knowledge should be produced as a common pool resource.

This question is especially virulent if we consider different forms of knowledge. Economization is frequently the default option regarding all forms of productive knowledge (the sciences, medicine, engineering, and so on). Other kinds of knowledge may not be susceptible to economization in a principled way because they relate to the

formation of identities, create cultural values, or enable various ways of resolving conflicting worldviews. In terms of disciplinary institutionalization, these are the humanities in the broadest sense as well as many variants of social science. Since economization cannot apply, the adoption of a generic economic view on knowledge needs to be subject to considerations of political public interest. But even when considering productive knowledge, there are important issues of the implicit and explicit value dimensions of research (such as in medicine) or disciplinary cultures (such as economics vis-à-vis other social sciences).

In summary, the economic analysis of knowledge and knowledge systems always needs to be embedded in considerations of the public interest. That is, it needs to be organized as an open process of generating the knowledge about the public interest.

Open and Closed Knowledge Systems

As we have discussed, knowledge systems exist on a spectrum ranging from control to chaos. While this is distinct from the common usage of “open” and “closed,” it is important that we discuss the characteristics of knowledge systems in terms of that common usage. “Open” and “closed” are words with moral orientations: an open mind signals enlightenment and charity, whereas a closed mind is dogmatic and obstinate; an open door points to the future, but shady dealing happens behind closed doors; an open economy drives wealth and prosperity, yet a closed economy is run by dictators.

The value of “open” is not a moral imperative but rather a property of a system that seeks to thrive in a changing, uncertain world, where not everything is known or can be known a priori about the world, and its possibilities and prospects. Open is a way of being, for an agent or any complex system, that is adapted to an environment of change

(Kauffman 1993). This vision of what it means to be open reflects the principles of thermodynamics (Prigogine and Stengers 1985), in which to be open is an evolutionary strategy, albeit a costly one.

An open and closed system can both survive in an unchanging world, but a closed system will do better because it will optimize according to efficiency. In a changing world, a closed system is fragile, whereas an open system is robust and adaptable. An open system can grow and evolve. This trade-off, between cost and dynamism, is a key distinction between open and closed systems.

The reason “open” has such positive emotional valence to the modern ear is that the essence of modernity is to live in a continually changing world. Indeed, to be modern is to attain stability and poise, to thrive, amid accelerating change and mobility. This is the world of new technologies, economic growth and globalization, cultures merging, and societies evolving. Knowledge (not just data, but meaning) is becoming increasingly networked. The technological landscapes within which knowledge is created are characterized by accelerating rates of change. This is creating challenges for all players in the system—raising questions of privacy and control as well as transparency and accountability, and supplying new opportunities for and ways of engaging with the products and building blocks of new knowledge.

Many of our responses to problems associated with increased rates of change are to attempt to close down (control) the sharing of knowledge (e.g., by such means as digital rights management software applied to digital publications), privatize and commercialize commons such as data (e.g., the 2018 Facebook and Cambridge Analytica data scandal (ur Rehman 2019), and increase the regulation and censorship of the internet (e.g., China’s Great Firewall). Closure becomes the answer to changes instead of increased transparency and openness. This is a fundamentally flawed response, however. Closed systems are more fragile in a world of accelerating

change. Seeking to harden them with regulatory stiffening only delays inevitable reckonings.

Institutions that might operate as either open or closed knowledge systems include government, funding organizations, disciplinary associations, journals, internet platforms, and so on. A key distinction between open and closed knowledge systems relates to the boundaries that exist between knowledge and nonknowledge. In closed knowledge systems, the borderline is rigid and boundary making is a top-down process. Disciplinary boundaries and structures are also fixed. In open knowledge systems, the border among knowledge and nonknowledge is endogenous to the interactions between all elements in the system. In closed knowledge systems, for example, Indigenous knowledge may be declared as nonknowledge because it does not fit comfortably within the established disciplinary order; in open knowledge systems, users may be involved in integrating Indigenous knowledge into the knowledge system. Further, in open knowledge systems, disciplinary borders are porous and always open to negotiation. In general, closed knowledge systems are hierarchical and operated from the top, placing an emphasis on control and governance.

Figures 2.1 and 2.2 are conceptual maps of systems that depict simple and ideal-typical structures and elements. In practice, the systems are actualized via processes of institutionalization. The university is one and presumably the most important form of institutionalization embedded in other forms, such as the journal system, disciplinary organizations, or government institutions. The systems can be realized as fractals on different levels; for instance, disciplines manifest a similar structure and can be analyzed within the same framework. In this case, it is crucial to recognize that there is potential for conflict and coordination failure; for example, the controlling instances of disciplines may stay in competition with other disciplines so that incentives for closure evolve endogenously. This, in turn, raises the question of how the relationship between

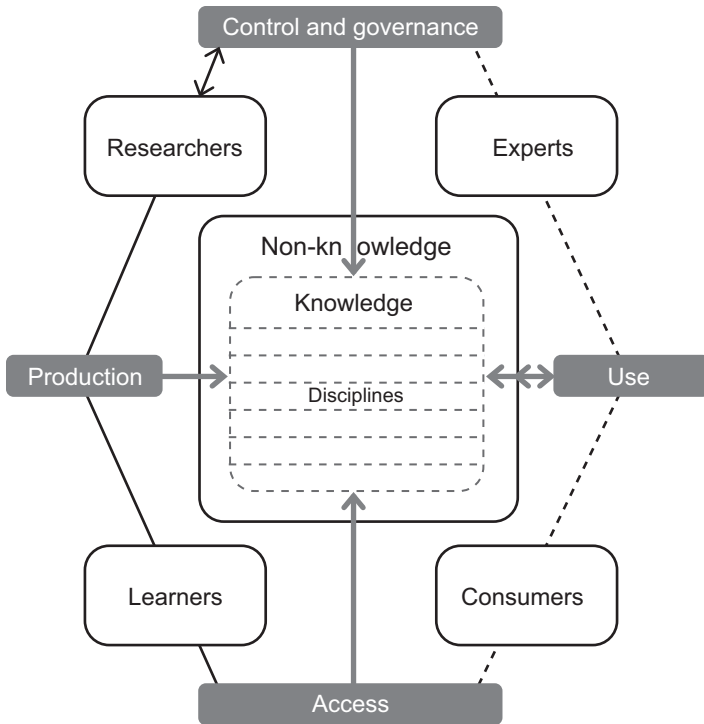


Figure 2.1
Open knowledge system.

different systems manifestations is governed. Universities may, for instance, be involved in governing the interaction among disciplines within their jurisdiction without, however, being able to determine the borders among disciplines on a global level.

One fundamental difference between closed and open knowledge systems is the role of “consumers” (users) of knowledge. Whereas in closed knowledge systems, experts also govern the use of knowledge (e.g., a doctor ordering a therapy or literary critics recommending books), in open knowledge systems, consumers become involved in the use of knowledge (e.g., patients have a say in selecting nonstandard therapies, or readers recommend good books to each other via review websites and social media). In addition, there is a feedback

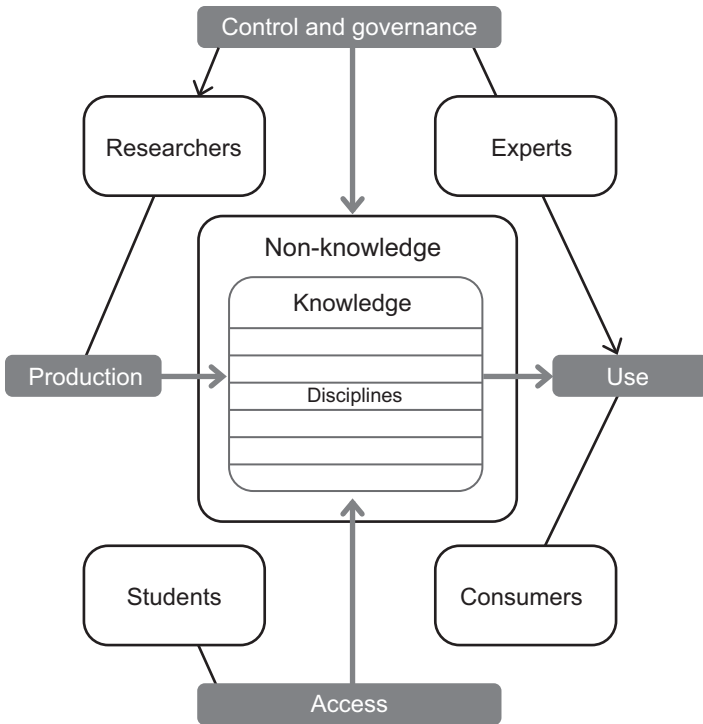


Figure 2.2
Closed knowledge system.

loop between use and knowledge. In closed knowledge systems, use may also lead to knowledge creation on the part of users, such as tacit knowledge in implementing technologies (Mokyr 2009), but in open knowledge systems, this is explicitly fed back into the production of knowledge, such as in citizen science or fan cocreation of cell phone designs in Xiaomi (Shirky 2015).

In closed knowledge systems, students have access to knowledge but are subject to hierarchical governance structures (e.g., learning is restricted to the disciplinary framework, or teaching is restricted to what is examined, not what is known). Access combines with a passive and restricted role in knowledge acquisition. In open knowledge systems, students become producers of knowledge and

are active in determining the content of learning. In a similar vein, consumers gain access to knowledge (e.g., modifications of knowledge are less impeded by copyrights and patents). Other differences in access include publication practices (e.g., open access in open knowledge systems).

In closed knowledge systems, researchers are subject to control from above such as performance evaluation and limited term contracts, with research aims determined by higher-level decision makers. Often this is institutionalized in an indirect way via the organization of disciplines; peer review and journal organization, for instance, may restrict freedom in determining the choice of topics and methods since incumbents control the process (researchers who have a prominent position at the control level). In open knowledge systems, researchers enjoy much more freedom and are more directly involved in the governance process (e.g., peer review may be transparent and public, allowing for responses to reviewers).

Both open and closed systems exist in complex and dynamic networks characterized by constant interactions between internal and external actors, which all shape the ways that these systems operate and can be governed. There are more actors involved in knowledge systems, with various intermediaries such as libraries and curators, and the beneficiaries of research outputs who might not directly interact with major components in the figures, such as patients benefiting from medical research.

Under some circumstances, openness becomes problematic or even deeply negative. Common critiques of the “information deluge,” prompted and supported by the openness of the internet, highlight the challenges in open knowledge. Too much open knowledge may become chaos and noise; if many knowledge objects are released in an unmediated or uncoordinated form, the results may lessen the value and impact of research and knowledge. Open may also be dangerous when it extends knowledge into places where it may cause harm, such as terrorism, exposing personal information

(like medical records), or taking advantage of inequitable relationships (notably Indigenous knowledge). Even if the “good” (or commodity that is sold, traded, protected, or consumed) may offer a benefit for some, it may do harm to others. Therefore open knowledge must be embedded in systems that foster exchange and value heterogeneity to promote transparency for the public good.

Social Knowledge Production

Centrally, it is in contact between different communities creating and using knowledge that value is being created in open knowledge systems. This can be the kind of economic value captured in the consideration of knowledge as an economic good, but can also be forms of value that are not easily captured in this conceptualization, including broader ideas of “the public interest.” These differences in perspective color many of the categorizations of open scholarship and knowledge creation. Benedikt Fecher and Sascha Friesike (2014), for instance, identify differing motivations in the “five schools of open science” through textual analysis of policy and advocacy documents built on concerns about economic efficiency, public interest, and the engagement of communities. Samuel Moore (2017) points out that openness in knowledge production may be better seen as a “boundary object,” a shared concept that actually refers to multiple different aspects.

Finding a simple common thread here is challenging or impossible. One aspect that links concerns around open knowledge systems and concepts of knowledge itself is the idea that knowledge is social in terms of its production, capacity to support public interest, communication, and the different kinds of value that it creates. Core to the question of how universities can contribute as OKIs will be how they can support and coordinate diverse communities along with effective communication to create the diverse kinds of value (and differing values) that underlie these different conceptions of knowledge.