Postdigital Knowledge Ecologies

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Abstract

This entry first provides a foundational understanding of various field-specific ecological metaphors as having been developed toward better understanding, managing, capturing, or catalyzing the socially contingent and evolutionary nature of knowledge. This is followed by a descriptive accounting of how these metaphors have both diverged semantically within discrete disciplinary aims, as well as converged within a transdisciplinary concern for epistemic justice. Finally, a concrete definition of postdigital ecologies of knowledge is provided that coalesces with the abovementioned convergence through a co-evolutionary process of knowledge collaboration, production, dissemination, and consumption aimed at ushering forth a more just biodigital future.

Keywords

Ecologies of Knowledge · Postdigital · Complexity · Transdisciplinarity · Knowledge Cultures · Biodigital

Introduction

Aimed at dissolving the functionalist accounting of knowledge and its social context, the historian of science Charles Rosenberg (1979/1998) developed the *ecology of knowledge* as an ecological metaphor that understands knowledge as an evolutionary construct, a product of the complex relationship between formalized knowledge, socially situated ideas, norms, values, and subsequent organizational behaviors and trends. Citing an existential concern for how new techno-social relationships had begun to mediate and shape new complex relationships between knowledge and society, this constructivist metaphor allowed for an ecological perspective of the 'fine structures of interaction' that characterize the complex evolutionary trajectory of ideas – 'new kinds of knowledge' - that emerge from new institutions of learning, and new modes of education within societies (Rosenberg 1979/1998: 222–224).

Originating from within the history of science, a field of study concerned with mapping the trajectory of scientific discovery and thought, this metaphor now entails a semantic ambiguity that is characterized by its application within and across various disciplinary fields (Savalyeva et al. 2022). Thusly, the following will highlight several iterations of this ecological metaphor such as the *ecology of knowledge*, *information ecology*, *ecologies of innovation*, *ecologies of knowledge*, *ecology of knowledges*, and *knowledge cultures*, foregrounding the understanding that the

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contemporary development of Rosenberg's (1979/1998) original metaphor may be viewed through semantic divergences that connote its utilization towards field-specific aims.

This brief historization will allow for a subsequent descriptive accounting of *postdigital ecologies of knowledge* - a metaphor that engages with the real-world complexity of postdigital human-technological entanglements through knowledge cultures in pursuit of a co-evolutionary biodigital future based in epistemic, social, political, and ecological justice.

Divergence and Convergence

As a form of techno-social disruption, the rise of Information and Communication Technology (ICT) alongside new networks of scientific communication, competition, and collaboration have witnessed the increasing utilization of Rosenberg's (1979/1998) ecological metaphor within field-specific divergences. These efforts have been largely aimed at understanding and facilitating the evolution of knowledge, information, and innovation within entrepreneurial, organizational, and institutional environments characterized by a diverse array of interrelated sociocultural and structural forces.

Hamati-Ataya (2017) notes that the primary aim of the sociology of knowledge is to 'identify and explain the social origins (ontogenesis), conditions of possibility, and processes of (re)production of our collective representations — (systems of) ideas, forms of thought, and modes of thinking'. Within this understanding, Akera (2007) notes that Rosenberg's (1979/1998) ecology of knowledge serves as a powerful metaphor that has allowed the field to move away from the study of 'single laboratories, institutions, and even networks', towards research into how the circulation of knowledge throughout 'loosely coordinated technical exchanges' contributes to important scientific discoveries (Akera 2007).

Within the field of knowledge management (KM), the rise of ICT has led to the development of ecological metaphors such as 'information ecology' that reflect a concern for understanding and managing 'how an aggregate of individuals, in a particular organization, in a particular industry affected by broader market trends, works with, thinks about, focuses on, and generally manages information' (Davenport 1997: 34). Within this field, the metaphorical appeal of the ecology of knowledge stems from its observational utility toward understanding diverse types of information, evolutionary change, bio-informational relationships, and patterns of behavior within organizations (Davenport 1997: 29). This corresponds with Savalyeva et al. (2022) who note that the ecological facet of Rosenberg's (1979/1998) metaphor has been used within organizational scholarship to denote systemic relationships based on ecological principles of complexity, diversity, environmental unpredictability, networked intelligence, uncertainty, and adaptation towards analyzing or describing types and qualities of relationships among structures, processes, agents, people, and objects.

However, it should be noted that this ecological view of knowledge has often been coopted by a marketized, human capital approach to extracting value from entrepreneurial *ecologies of innovation* – a metaphor centered within a concern for capturing and directing the potential social impact of 'networked markets' towards the generation of new spending patterns, businesses, and increased returns on investment (Bollier 2000). From within the field of sociology, Star (1995) provides a divergent definition of *ecologies of knowledge* as a metaphor that is more in line with Rosenberg's (1979/1998) original aim, i.e., the utilization and development of the analogy of an ecosystem toward a systematic understanding of the component properties that constitute the systemic properties of science. Specifically, Star (1995) argues that the organic core of this metaphor constitutes a resistance to social/natural/technical dichotomies, positioning science as an open ecosystem wherein the relationship between technology (as a means for collective social and political action) and science (as a profession or practice that people do together) promotes an understanding of knowledge as an ongoing political and relational proposition.

This definition of ecologies of knowledge understands that 'the politics of knowledge is no different from politics in general; it is the art of the possible' (Wastell and McMaster 2007: 4). Thusly, Star's (1995) development of this ecological metaphor provides an augmented understanding of science as an unfinished march toward social and political change, one that requires a reification of scientific knowledge as a networked process of collective intelligence that assumes diverse standpoints, peoples, cultures, and epistemologies.

Barreto (2014) notes that within the field of decolonial theory, economic and political injustices radiate outward from cognitive injustices institutionalized throughout the colonial core of current neocolonial/neoliberal knowledge production, requiring that the search for global justice include the search for cognitive justice. Toward this aim, de Souza Santos (2016: 190) presents an argument for *ecology of knowledges* that grant 'equality of opportunities' to different kinds of knowledge, maximizing their contributions to epistemological disputes aimed at building 'another possible world' based in pragmatic, democratic, and just socio-ecological relations.

This decolonial shift marks a concern for epistemological justice that has cut across disciplinary lines and contingent aims. This shift may be witnessed within the 2017 Knowledge/Culture/Ecologies International Conference (KCE2017), which represented a growing interdisciplinary recognition of our collective vulnerability and dependence on the inhuman within an experimental attempt to explore the possibilities of generating *knowledge cultures* whose practices will help us understand and confront 'overly flattening topologies of relationality' (Salazar and Tironi 2018).

There has emerged a transdisciplinary concern for the development of not just knowledge ecologies but knowledge cultures in search of epistemic, political, social, and ecological justice. As expressed by Salazar and Tironi (2018), there exists a need to go beyond the social through an understanding of more-than-human entanglements that engage with the Earth from different theoretical, intellectual and activist domains, challenging the political amalgamations in which 'life' has been traditionally defined and produced. Within this understanding, the following will highlight that *postdigital ecologies of knowledge* constitute a metaphorical representation of the emergent actualization of one such attempt.

Postdigital Ecologies of Knowledge

The *postdigital* is a developing concept that challenges humanity to reach past utopic techno-deterministic accounts of increasingly complex and problematic human-technology associations in pursuit of alternative biodigital futures (Jandrić et al. 2018; Knox 2019; Peters et al. 2021). With an eye towards biodigital co-evolution, its transdisciplinary research context has incorporated a diverse range of perspectives that engage and challenge the complex bio-informational, socio-material, socio-political, and eco-social assemblages that undergird the production, creation, mediation, and dissemination of knowledge within our current global society. If cast as an emergent transdisciplinary field, research into the postdigital may be said to both foreground and contribute to a developing philosophy of bioinformational convergence.

Postdigital philosophy understands biology and digital information as dialectically interconnected within a unified bioinformational ecosystem, allowing us to resolve problems within 'new knowledge ecologies' that are nested within an overarching 'constellation of technoscience' (Peters et al. 2021). Notwithstanding, Pappachen and Ford (2022) argue that this bioinformational ecosystem is currently enmeshed in a problematic political economy of bioinformational capitalism that aims to promote biological materiality, an effort to control, conquer, and direct bio-digital technologies, knowledge, and practices towards surplus labor value.

A more detailed understanding of the concomitant need for new ecologies of knowledge may be garnered through a clear conceptualization of *knowledge cultures*. First developed by Peters and Besley (2006), *knowledge cultures* is a concept which understands that the recognition, pluralization, and enhancement of culturally bounded ways

of knowing is required to cement trust within and between communities of practice - knowledge partners that co-create, produce, and consume knowledge based on practical engagement with the world. The need to recognize the value, validity, and significance of knowledge as 'fundamentally social and dependent on an evolving community of inquiry' has since been incorporated within a postdigital understanding that the increasing digitization, speed, and compression of communication 'has led to the spread of global cultures as knowledge and research networks' (Peters et al. 2018).

Networked collaboration within and between postdigital scholarly communities of practice have precipitated the emergence of postdigital knowledge cultures, contingent ecologies of knowledge wherein human agency and critical thought converge within a non-linear process of co-evolutionary adaptation best understood as *biodigital becoming* (Reader 2022). This collective endeavoring may be witnessed within various contributions to postdigital scholarship that coalesce around the question of 'what existing or new social issues, injustices or inequalities may be aggravated, or alternatively what positive visions are developing and how might these be improved' (Peters et al. 2021: 12). This dual aim may be evinced within attempts to establish radically open political economies of knowledge based in non-rivalrous production/consumption practices (Peters 2019), efforts to develop ecopedagogies that allow us to better understand living systems and their interactions with technology (Jandrić and Ford 2022), contributions that both interrogate the implications of educational automation and ask what alternative forms might be possible (Selwyn et al. 2021), and calls to justice from within a sympoetic reimagining of the social/natural/legal contract that binds all living things (Sturm 2020).

The abovementioned constitute but a small fraction of a larger pooling of individual and collective exercises in biodigital becoming. However, when taken in aggregate, they are representative of the diverse knowledge cultures that currently contribute to emergent postdigital ecologies of knowledge within an ever-expanding constellation of technoscience aimed at better understanding how humans interact with technology. In this way, postdigital ecologies of knowledge may be understood as a metaphor for decentralized, self-organizing component properties within the overarching scientific ecosystem, one whose networked collaboration towards a process of biodigital becoming reflects a form of collectively intelligent behavioral adaptation aimed at correcting/transgressing the current systemic failings of bioinformational capitalism.

Summary

This entry begins with a description of Charles Rosenberg's (1979/1998) foundational development of an ecological metaphor of knowledge within the field of history of science. This is followed by a descriptive accounting of semantic divergences that characterize discrete field-specific aims, as well as convergences that have witnessed the use and development of this metaphor within an increasing transdisciplinary concern for epistemic justice. Next, collaborative, decentralized postdigital ecologies of knowledge are shown to have engaged this transdisciplinary context within a developing scope of postdigital-bioinformational convergence. A subsequent characterization of postdigital ecologies of knowledge is highlighted within an emergent process of biodigital becoming that is catalyzed through individual and collective knowledge cultures aiming to transgress the systemic failings of bionformational capitalism. This entry describes an overall understanding of postdigital ecologies of knowledge as the metaphorical representation of a developing co-evolutionary procession towards a biodigital future based in epistemic, political, social, and ecological justice.

Cross-References

- ▶ Networked Learning
- ▶ Postdigital
- ▶ Postdigital Activism
- ▶ Postdigital Anthropology
- ▶ Postdigital Artificial Intelligence

- ▶ Postdigital Collective Intelligence
- ▶ Postdigital Ecopedagogy
- ▶ Postdigital Epistemic Violence
- ▶ Postdigital Epistemology
- ▶ Postdigital Intellectual
- ▶ Postdigital (Post)Colonialism
- ▶ Postdigital Transdisciplinarity

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