On the Interplay of Images: Imaginaries and Imagination in Science Communication

by Andreas Metzner-Szigeth (ed.) (2022) Firenze, Leo S. Olschki, 440 pp.

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A growing number of sociological and critical theoretical studies are arguing for new frameworks to theorize and grapple with contemporary social change resulting from information and communication technologies (ICTs) and computer-mediated communication (CMC). From smart and biometrics border controls to body scanners, from drones to passenger and financial surveillance systems, the study of the "visual politics of technologically mediated practices of seeing" (Bellanova et al. 2021, 128) has gained attention in recent STS scholarship, particularly where key tenets of Actor-Network Theory concerning the role of technologies (and other non-humans) in societal formations, intersect with Foucauldian theorizing on practices and techniques of neoliberal governance (i.e., governmentality). In the context of these diagnoses, data-driven technologies have been examined not merely as instruments but rather as mediators and co-producers of broader socio-political mechanisms that reorganize international relations, the public-private sphere, and population management (Bigo 2017). In turn, this epistemic view – where "Data has the performative power that is resignifying political life" (Ruppert et al. 2017, 2) – has significantly influenced the study of sociotechnical imaginaries that are shaped by the continuous interactions between knowledge production and digital data, as well as the collective meaning-making produced by these imaginaries (Csernatoni 2022).

"Imagination in Science Communication" engages with ongoing discussions by emphasizing the significance of visual communication in the de- and re-construction of the digital engineering of the social world, viewed through the lens of Science & Technology Studies (STS) and Science Communication. In light of the increasing focus on the digitalization and datafication of human activities in the social sciences, this timely book, edited by Andreas Metzner-Szigeth – who holds a full professorship in the Sociology of Culture and Communication at the Free University of Bozen – explores how visual communication, encompassing various topics (e.g., health, risk narratives, conspiracy theories, digitally mediated environments, and techno-aesthetics) might practically influence social processes of meaning-making. This volume adopts a practice-oriented approach, using generative dynamics to explore the intricate interactions among images (cognitive processes), imaginaries (communicative processes), and imagination (consciousness). In the first three theoretically oriented chapters, along with Chapter 28, the

editor Andreas Metzner-Szigeth engages with the complexity of technologically advanced societies, paying particular attention to the changing connection between scientific knowledge production and socio-technical practices (Introduction; Chapter 28). According to him, if we are to understand how social actors make sense of reality, then it is imperative that "communication in scientific practices" (Chapter 2, p. 28) is taken as a point of departure, beginning with acknowledging how inferential data processing (Chapter 3, p. 37, p. 44) redraw the epistemic, cognitive, and perceptual categories of contemporary algorithmic life.

The following five chapters implement the chosen generative approach by linking scientific knowledge with creativity. In Chapter 4, Gerald Hünter exemplifies this by showing how a generative analysis of the "image-generating apparatus" (p. 54) can capture the influence of neurobiology on the social imagination. Both Chapter 5 and Chapter 6 employ a generative approach to explore the epistemic dimensions of imagination. Xabier Insausti (Chapter 5) combines the philosophical approach to imagination originating from Plato, Cassirer, or Adorno and Horkheimer to develop a critical understanding of scientific discourse in neurobiology. Massimo Bartolini (Chapter 6) reflects on fake news, exploring communicative elements, by analyzing the relationship between fantastic imagination (myths) and true imagination (science) in producing material effects on social values, lives, and beliefs (p. 80). From a sociological perspective on cultural and communicative processes, Luca Toschi, in Chapter 7, uses the concept of autopoiesis proposed by the second order of cybernetics to reveal how the epistemic dynamic between expectation/imagination and results/products is intricately connected to complexity at the level of social systems. In the field of Comparative Literature, Andreas Böhn (Chapter 8) focuses on three German novels on Artificial Intelligence, automation, and digitalization, addressing one of the most fundamental questions: how affective-computational architectures shape the digital imaginary by altering the conditions of human cognition. The next three chapters stand out in their theoretical and methodological innovations. Selena Savić develops in Chapter 9 a notion of visual imaginary from the perspective of Design and Media Cultures, which allows an incredibly complex picture of how data production and the computational processing logic crosses into a creative act brought by aesthetic, semantic, and epistemic elements based on decoding incomplete messages. Tzung-Wen Chen (Chapter 10) introduces the concept of Techno-Aesthetic to understand the "performativity, materialization, and propensity" (p. 135) of digital images when integrated into the social imaginary. In Chapter 11, Thomas Hundt develops a notion of virtual reality, which allows an understanding of the concealment of the cognitive boundary between experience and existence as an instrument of power and cultural technique. Interestingly, the nexus of data production to digital practices is described as a quantum logic showing how science and technology reinvent the social world at the level of different cognitive and perceptual systems of meaning.

The following eight chapters provide a practice-grounded approach to the generative analysis of the *visual imaginary*, promoting the integration of Science & Technology Studies with Science Communication, as suggested by the editor, Andreas Metzner-Szigeth, to a more rigorous and empirical research. In Chapter 12, Letizia Bollini focuses on celestial sphere models, moon observations, mind mapping, and DNA representations to give an example of the cognitive/visual changes between material models of knowledge and interpretative models of phenomena. Within this frame, Emiliano Guaraldo (Chapter 13) debunks the myth of abstraction

surrounding the optical techniques visualization by exploring the epistemic functions at play in Dataverse, where "types of data visualization, […] detached from the object of visualization itself" (p. 172) offer insights about the post-critical politics in the Anthropocene. To complement this inquiry, Valentina Marcheselli (Chapter 14) pinpoints the transformative process by which digital images of Earth mold the boundary between understanding and representing. This generative analysis of the visual imaginary triggered by technoscientific representations is further deepened by Charudatta Navare. In Chapter 15, she delves into the ideological function exerted by specific color choices using Ernst Haeckel's *Tree of Life* (1897) to show how conservative imaginaries linked to progress and evolution are implicitly reiterated within contemporary popular culture. In Chapter 16, Emanuel Mathias adds one more piece to the understanding of epistemic functions operating within visual representations by focusing on the digitalization of fieldwork. Chapter 17 discusses the results of the research "ScientificVisualization: Impact on Practice [SVIP]" conducted by Stephan Schmith-Wulfen and Elisabetta Rattalino about the interplay between mental images and scientific imagination. As part of this area of study, Chapter 18 provides an example of practice-based research on cultural heritage and place memories in the context of the Sesto Dolomiti landscape. Focusing on the possibilities offered by digital apps, Waltraud Kofler Engl, Alexandra Budabin, and Gaia Piccarolo demonstrate how generative communication can be helpful by actively transforming learning processes. Investigating the socio-cultural and symbolic dimensions directing the word Heimat in South Tirol, Ingrid Kofler (Chapter 19) offers a place at the *visual imaginary* table to the most inspiring analysis of normative values prevailing in the neoliberal model of society.

In the following four chapters of the volume, the task of incorporating *visual imaginary* both in STS and Science Communication scholarship is grounded on the social construction of reality. Ilaria Riccioni (Chapter 20) combines the cognitive-enactive approach to mind and perception with the ecological approach to new media originating from Baudrillard and McLuhan to discuss the epistemic-shaping dimensions between experience and interaction that go deeper than the constructs of simulacrum, hallucination, and hypnosis. According to Roland Benedikter (Chapter 21), this ambivalent dimension has a direct relationship to the "meta-material" (p. 276) reorganization of capitalism, which is believed to place at the core of the value chain production, creativity processes, and imagination. Developing a typology called "visual imagineering", Joe Ravetes, in Chapter 22, connects contemporary socio-political dynamics to the epistemic dimensions of visual thinking. These theoretical contributions pave the way for a new critique of communication power in contemporary societies. Nevertheless, a well-established interdisciplinary tradition between STS and Science Communication enables a reevaluation of the role of *visual imaginary* and its generative components within broader societal dynamics, as majestically illustrated by Cristina Orsatti in Chapter 23. Significantly, the focus on the *visual imaginary* in Science Communication can give a breadth of understanding of socio-technical modes that (de)construct social reality as we know it – for instance, both Chapter 24 and Chapter 25 set out health communication and literacy frameworks. Berenice Golding, Elizabeth F. Caldwell, and Sarah Falcus (Chapter 24) analyze children's picture books addressing dementia through empirical research conducted with two focus groups of five adult carers and four nurses to intercept biased collective representations. Eugenio Pandolfi, Lisa Capitini, Ilaria Marchionne, Marco Sbardella, and Viola Davini (Chapter 25) deconstruct health literacy on

childbirth by a comparative analysis between infosphere and embodied knowledge to define the communicative components that should be explicitly redefined to provide correct information to patients. By prioritizing risk communication, Joost van Loon (Chapter 26) explores the aesthetic logic enhancing Capitalist Realism through the prism of Bifo, Derrida, and Beck. These aesthetic normative constraints are attested by Brian Rappert (Chapter 27) through the generative dynamics between images and imaginary, including conspiracy theories. Employing the documentary *Conspiracy Theory: Did We Land on the Moon?* – this case study shows how asymmetrical truth-making appears to be the precondition for the rise of the new myths of our times.

Overall, the volume presents a broad repertoire of theoretical approaches to *visual imaginary-building processes* in Science Communication and makes the visual operationalization transparent. This is extremely helpful to both seasoned researchers and newcomers to the field. Despite the programmatic label "On the Interplay of Images" suggesting a focus on the interplay, the chapters partly analyze what constitutes images, including technoscientific representations, digital data, virtual reality, visual tools, and scientific visualizations. This broader analysis stems from a non-representational, non-functionalist, and non-constructivist approach to redefining digital practices and data production within the generative paradigm of communication employed by this research program. In doing so, the book strengthens STS through the application of socio-cybernetics methods developed by Science Communication researchers. A key aspect that seems to be lacking is a clear formalization of the specific epistemic, cognitive, and perceptual components that influence socio-technical practices, particularly in the transition from generative dynamics to visual imaginary, and from visual imaginary to social change.

The ground-breaking proposal presented in this volume has the merit of shedding light on the problematic tensions between scientific communication, technoscientific representations, and knowledge production. To enhance the volume's findings and make it a more solid, consistent, and powerful analytic resource, I believe it would be pertinent to complement its results with analytical models. This strategy could help establish a clear distinction between visualizing practices and visualizing processes, allowing researchers to identify more robust patterns for analyzing how visual imaginary operates at the intersection of various social, political, and ecological crises that challenge digital societies. Given the pervasive influence of opaque algorithms, cloud infrastructures, digital search, and mobile operations in socio-technical practices, these new conditions of knowledge production open new opportunities for innovative synergies between STS and Science Communication. This integration could be effective in addressing issues such as fake news, strategic narratives, democratic erosion, and social distrust. Therefore, this volume represents one of the most significant contributions to this field of research and should play a central role in the future development of studies focusing on the interplay of images, imaginaries, and imagination in Science Communication.

References

Bellanova, Rocco, Irion, Kristina, Jacobsen, Katja Lindskov, Ragazzi, Francesco, Saugmann, Rune and Suchman, Lucy (2021) *Toward a Critique of Algorithmic Violence*, in "International Political Sociology", 15(1), pp. 121-150.

Bigo, Didier (2017) *International flows, political order and social change: (In)security, by-product of the will of order over change*, in "Global Crime", 18(3), pp. 303-321.

Csernatoni, Raluca (2022) *The EU's hegemonic imaginaries: From European strategic autonomy in defence to technological sovereignty*, in "European Security", 31(3), pp. 395-414.

Ruppert, Evelyn, Isin, Engin and Bigo, Didier (2017) *Data Politics*, in "Big Data & Society", 4(2), pp. 1-7.