

## Reactivating Elements: Chemistry, Ecology, Practice

by Dimitris Papadopoulos, Maria Puig de la Bellacasa and Natasha Myers (eds.) (2022)  
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Elements of various forms construct the world around us: constituents of the Periodic table, organic building blocks of life, or ontological forces of Air, Water, Earth, and Fire. These basic forms of organization are crucial for the survival of life. The contributors to the volume *Reactivating Elements: Chemistry, Ecology, Practice* aim to view and analyze elements in their elusiveness and complexity and to unfold what “elemental thought” (p. 1) could mean amid the current ecological crisis.

All three editors of the volume, as well as many of its contributors, are well situated in the field of STS. The research of Dimitris Papadopoulos focuses on the intersections between technoscience and social transformations (Papadopoulos 2018) and the introduction of green and alternative chemical technologies. Maria Puig de la Bellacasa, the author of *Matters of care. Speculative ethics in more than human worlds* (2017), currently conducts research on human-soil relations, particularly in the context of science, eco-social movements, and artistic practices. Natasha Myers, director of the Plant Studies Collaboratory, has coined the term “planthropocene” emphasizing a vision of the future rooted in the relationships between plants and humans (Myers 2017). In addition to editing the volume, Puig de la Bellacasa and Papadopoulos each contributed a chapter drawing upon their previous research.

The diversity of editors’ and contributors’ research interests influenced the volume’s rich patchwork-style composition. This is a book one could approach slowly and return to repeatedly, and each time, like in a kaleidoscope, discover a different layout of meanings. As the editors note in the *Introduction*, they have aimed for such richness and complexity, inviting the authors to contribute to the collection “in the spirit of speculative inventiveness” (p. 4), i.e., to reflect on elements in a free and open manner. The initial idea was not to build an overarching theory of the elements, but instead to experiment and engage in an open, non-restrictive conversation. As the volume demonstrates, elements appear in multiple forms: as forces and energies, as chemical particles, as social forms, or as material objects. Most importantly, the contributors aim to analyze the elements in their relation to humans seeing them “not as the nature which ‘humanity’ must struggle against or tame, but as ‘naturecultures’” (p. 6). The volume’s eleven chapters address such more-than-human naturecultural arrangements from different angles, but all of them point out the distinction between elements and elemental.

By accentuating this distinction, the authors demonstrate that elements are complex and fuzzy phenomena tied up with multiple aspects of human life and provoking contradictory responses.

In the introduction, the editors group the chapters into three sections: “Elements as relational substance”, “Actualities of the elemental”, and “Elemental practices”. Each of these subsections, in my view, could potentially correspond with one concept from the title – chemistry, ecology, or practice, all connected through the notion of **reactivating**. By reactivating, the authors refer to “calling a recognized entity into a new situation; catalyzing new models of thought and action” (p. 1).

The first four chapters by Isabelle Stengers, Dimitris Papadopoulos, Stefan Helmreich, and Joseph Dumit engage with elementary forms and anthropogenic chemicals entangled with social life. In the opening chapter, Isabelle Stengers discusses one of the volume’s key terms, “reactivation”, seeing it as addressing the elements’ “metamorphic character, both shaping and being shaped by the particular ecology in which they participate” (p. 27). The following three contributions discuss the reactivation of elements in relation to toxic regimes and reparative justice (Papadopoulos), thinking with water and waves as elementary forms of social and elemental life (Helmreich), or bromine as an element animating new ways of talking about and working with substances (Dumit).

The next four chapters deal with elements in their **actuality**, i.e., as driving forces in world-making. Astrid Schrader analyzes transformative agencies of marine viruses alternating between living and non-living phases, as “elemental ghosts” (p. 109). Joseph Masco, exploring the history of radioactive elements and plastic, provides a striking contrast between a world as neatly organized and ordered by the Periodic table and its messy and complex actual arrangements. The chapter of Patrick Bresnihan engages with the wind as a reactivation of the weather’s elemental forces, as a contested resource, and as a potential ally in more-than-human engagements. To continue the conversation on the actuality of elements, Cory Hayden examines crowds as elementary forms of social life, asking what crowds are composed of and what makes them hold together.

The final three chapters of the volume deal with various forms of elemental thinking in relation to power imbalances. These chapters pay special attention to alternative practices and methods of reactivating the elements and engaging them in more-than-human ecologies. The contribution of Maria Puig de la Bellacasa focuses on the soil as a part of the biochemical processes of breakdown and decreation, particularly emphasizing alternative stories of engaging with soil as an element. Tim Choy discusses the agency of air in more-than-human engagements, provocatively offering the readers to imagine a “conspiracy of breathers” (p. 249) as a political formation potentially resisting the industrial urge to pollute. The final chapter by Michelle Murphy centers on the industrial pollutants in Chemical Valley (Sarnia Lambton region in Canada), built on the land stolen from Indigenous residents. Murphy defines governmental and industrial efforts to erase or deny environmental violence as “infrastructures of gaslighting” (p. 265) embedded in the colonial permission-to-pollute (p. 262) and neglecting alternative ecologies.

The final chapters read with strong emotions and leave an aftertaste of the volume ending too abruptly. A concluding intervention, once again bridging the diverse contributions and discussing parallels and interrelations between them could have potentially helped readers to navigate the complex structure of the book. Additionally, it would have been interesting to learn more about the development of the collective thinking behind this volume. It has been

mentioned in the volume that its idea originated from a panel at the European Association for the Study of Science and Technology conference in 2016 (p. 14, p. 79). It would perhaps be useful for the readers to see in more detail how the authors' approach to elemental thinking and the concept of reactivation changed as the panel discussions gradually turned into a co-edited book.

Overall, this volume represents a solid contribution to STS and environmental humanities literature. It could be well situated in recent scholarly conversations on resources as parts of more-than-human assemblages (e.g., Salazar et al. 2020; Watts 2019). It will be a relevant and exciting read for scholars, students, and activists interested in more-than-human assemblages, power and resistance, as well as alternative ways of engaging with nonhuman actors in a shared landscape.

## References

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