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DARRELL P. ARNOLD (ED.), *TRADITIONS OF SYSTEMS THEORY. MAJOR FIGURES AND CONTEMPORARY DEVELOPMENTS*, LONDON/NEW YORK, ROUTLEDGE, 2014.

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“There is absolutely no knowing what may yet become part of history. The past is still perhaps essentially undiscovered! There is yet so many retroactive forces still needed!”, Nietzsche writes in one of his aphorisms. In effect, this is the project realized by the book *Traditions of Systems Theory*. It is not a coincidence that the editor’s introductory article in Part I is entitled *Systems Theory: A Secret History of the Twentieth Century*. Indeed, it is suggested that there is a somewhat veiled intellectual history that needs to be reconstructed carefully. Ludwig von Bertalanffy, one of the founders of general systems theory has already claimed that the works of many thinkers might be reinterpreted as systems theory *avant la lettre*, including those of Nicholas of Cusa, Paracelsus, Leibniz, Vico, Ibn Khaldun, Goethe, Whitehead and others. This time the explicit systems theories of the twentieth century themselves are re-read as very important but mostly unacknowledged achievements. Accordingly, the analyses of the early, usually forgotten developments are especially valuable. This volume refers to systems theory as comprehensively as possible – “systems theory” embraces not only the various ramifications of general systems theory and cybernetics, but also dynamic systems theory (as developed by Ilya Prigogine and

others) and further contemporary developments (such as systems heuristics and evolutionary cultural ecology).

In his introductory article to Part I, Darrell P. Arnold emphasizes that Bertalanffy was inclined to integrate the sciences into one megasystem. According to Arnold, despite the failure of these immodest aspirations, systems theory became very significant, even in fields in which its influence mostly remained hidden (as in the case of holistic ecological thinking). Furthermore, Arnold compares certain systems theoretical insights to contemporary posthumanist (and transhumanist) constructivism and concludes that “we don’t get at the world directly or fully but only indirectly and incompletely, within the parameters of a particular system, with all that system’s limitations” (p. 13). Obviously, this is an essential counterpoint to the original ambitions of Bertalanffy. In Chapter 2, Philipp Schweighauser summarizes the conceptual results of information theory with a special emphasis on the problem of informational entropy, noise and semantics. Schweighauser points out not only that Shannon’s information theory faced many challenges, especially with regard to meaning and its distortions, but he also reconstructs the persistence of information theory in different theoretical approaches,

including the technology-centred, postanthropocentric theories of culture (as elaborated, for instance, by Friedrich Kittler) and the aesthetic theories of Jacques Attali, Michel Serres and William R. Paulson. In Chapter 3, Ranulph Glanville's article on cybernetics insists, in a venturous manner, that "cybernetics seems to be more general, more philosophical, and more abstract than systems theory" (p. 47). Regardless of this disputable thesis, Glanville reconstructs the main achievements of cybernetics cautiously and with precision. It is of great importance that he questions the pertinence of the distinction between first-order and second-order cybernetics, given the fact that the observer was often included already in the early work of Norbert Wiener. However, it does not follow that Glanville neglects the significant changes within cybernetics, on the contrary, he stresses e.g. the transformations with regard to the concept of error or the attempt of the cybernetics of cybernetics to make the field self-consistent and apply the system to itself. John Bruni's very short article (it consists of four and a half pages), entitled *Expanding the Self-Referential Paradox. The Macy Conferences and the Second Wave of Cybernetic Thinking*, describes the Macy Conferences as a decisive catalyst for second-order systems theory. One can find many exciting allusions, for instance, when Bruni writes that, according to Wiener's pivotal intuition, "systems radically destabilize self-identity, that is, they disturb the idea of the corporeal body as a grounding for subjectivity" (p. 81). Unfortunately, even this remark remains a mere hint. Bruni's extremely brief article can be contrasted to the 53-page-long, profound article written by David Pouvreau, *The Hermeneutical System of General Systemology. Bertalanffyian and Other Early Contributions to Its Foundations and Development*. Pouvreau defines Bertalanffy's theory as a philosophical (however, anti-speculative, "inductively metaphysical") systemology and, accordingly, gives emphasis to the philosophical (e.g. neo-Kantian and process-philosophical) sources of systems theory and its conceptual decisions

(de-substantialization, holism, relationism, constructivism, etc.). Although Pouvreau does not spend much time on convincing us with regard to the adequacy of the expression "hermeneutics" in this context, he accurately demonstrates the relevance of the symbolic sphere for Bertalanffy's perspective. It is particularly inspiring to follow Bertalanffy's vacillation between realist and constructivist philosophical positions. What is more, Pouvreau also takes into consideration the axiological, praxeological and technological aspects of general systemology. In the following chapter, Bernhard Pörksen discusses the epistemologically inspiring constructivism of Heinz von Foerster. As Pörksen puts it, "with second-order cybernetics comes the obligation to be conscious of one's own idiosyncrasies and blind spots, to link objects to oneself, and to understand them seriously as one's own product" (p. 139). In addition, Pörksen treats ethics as a key question for constructivist-cybernetic anthropology, with special attention to the challenge of undecidability and incalculability. The epistemological (and ontological) issues are also a central focus in Bob Mugerauer's article *Maturana and Varela. From Autopoiesis to Systems Applications*. Mugerauer is careful to mention the most significant divergences between Maturana and Varela. For instance, whereas Maturana defines organizational closure and the stability of homeostasis as the decisive aspect of autopoiesis, Varela claims that the emphasis should be put on structural coupling. Mugerauer also gives importance to ethical questions, within the context of a practical know-how and our "situated embodiment". The detailed interpretations of evolutionary theory, immunology and neurophenomenology will be of great help for readers unfamiliar with Maturana's and Varela's theory. In the final article of Part I, Joel B. Hagen covers Eugene Odum's thesis on the homeostatic ecosystem. This article is by far the most critical with the object of its analysis, in accordance with the controversies around Odum's suggestion that ecosystems have to be conceptualized as some kind of balanced superorganisms.

With an eye on both pro and contra arguments, Hagen managed to summarize one of the most interesting debates in systems theory and cybernetics in a nutshell.

Part II focuses on the sociological implications of systems theory, including Talcott Parsons' sociological theory of action systems, Luhmann's theory of complex systems and world-systems theory. Bettina Mahler's chapter draws up the development of Parsons' structural functionalism from his early voluntaristic theory of social action. Moreover, Mahler contrasts Parsonsian systems theory with Immanuel Wallerstein's world-systems theory and Luhmann's sociology. Luhmann's somewhat ambivalent realist constructivism is more detailedly presented in the following article written by Walter Reese-Schäfer. What is unique about this article is that it does not hesitate to deal with the most challenging and speculative problems of Luhmannian theory, including that of the observer's paradoxical self-observation as reflection, the re-entry of the differentiation between system and environment within the system or the exclusively recursive possibility of the world. Mahler brilliantly articulates even the uncommonly complicated concepts and succeeds in demonstrating the radicality of Luhmann's de-substantializing and de-subjectivizing theoretical project. In Chapter 11, W.L. Goldfrank explores the politically presumably most loaded branch of systems theory, namely, Wallerstein's world-systems analysis. It is worth noting that Goldfrank also takes into consideration the so-called dependency theory and the work of André Gunder Frank. Special attention is given to the processual (and transformational) models of world-systems theory and the influence of Prigogine's theory of fluctuations and chaotic turbulence. At the end of the article, Goldfrank also mentions the emancipatory hints of Wallerstein's theory, with the slogan "Another World is Possible". Part III discusses further contemporary developments, far beyond the early scope of systems theory. In Chapter 12, Andrew McMurry covers some of the most important applications of systems theory in literary studies, among others,

the theories of N. Katherine Hayles, Cary Wolfe, and Bruce Clark. He suggests that a fusion of systems approaches and the theories of posthumanism, media and mass culture is not only possible but highly desirable. Chapter 13, *Systems Heuristics and Digital Culture*, by Raphael Sassower and Nimrod Bar-Am, unnecessarily repeats certain unargued commonplaces with regard to (anti-)reductionism, the overcoming of the paradigm of the "clock" and the still prevalent Smithian ideal of *laissez-faire*. The article becomes more meaningful when it introduces the problem of complexity, interconnection and joint/crowd intelligence. The authors convincingly argue that the concept of the digital-stigmatic-human system is one of the most promising contemporary developments in systems theory. Unfortunately, in Peter Finke's article, *A Brief Outline of Evolutionary Cultural Ecology*, cultural ecology appears merely as a floating and vague approach, without a satisfying clarification of its historical development and key exponents – these information might be reconstructed only partially, with the help of the notes. The article contains certain inspiring remarks (e.g. on the typology of information cycles), however, it still remains an unfinished draft. In Chapter 15, *Prigogine. The Interplay of Cosmos, Complexity and Culture*, Dorothea Olkowski shows extensively that complexity and chaos theory might be the most significant sequel of systems theory. According to this vision, the concepts of time irreversibility, attractors, bifurcations, far-from-equilibrium and dissipation might renew the way we used to think about systems. Regrettably, the exact relations between "classical" systems theories and Prigogine's ideas remain unclear. At the end of the article, Olkowski discusses the cultural relevance of complexity and chaos theory, with special focus on the feminist interpretations of the "non-treatment" or the demonisation of chaos, or of the fascination with its images. In Chapter 16, *Systems Theory and Practice in Organizational Change and Development*, Debora Hammond, following Gareth Morgan and others, rejects

the view that organizations can be merely “psychic prisons and instruments of dominations” (p. 329). Hammond provides the reader an opportunity to gain insight to the origins of management science, the general systemological and cybernetic theories of human systems, critical systems approach and soft systems methodology. In the concluding remark, the author stresses that the aforementioned approaches lead “toward the cultivation of ... the capacity for informed self-organization” (p. 340). The book concludes with the transcript of a Skype conversation between Nora Bateson (the daughter of Gregory Bateson) and Phillip Guddemi (a former student of Gregory Bateson).

Before enumerating the undisputable positive aspects of the book, we have to make the following critical remarks. Firstly, *pace* Hans-Georg Moeller’s laudation, *Traditions of Systems Theory* provides a “state-of-the-art survey” only to a limited extent. More precisely, it remains unclarified how and why the crisis of systems theoretical approach began and which systemological insights are to be forgotten from the viewpoint of scientific conceptuality and heuristics. As Darrell P. Arnold puts it, systems theory “did not live up to the aspirations” (p. 11), at least not in fitting systems into a megasystem, and “some versions have proven rather more speculative than scientific” (*ibid*). What is more, Arnold adds that “much of the success of systems theory and cybernetics has been because of their influences on developments that continued without them” (p. 4), but also that certain “explicit forms of systems theory and cybernetics do continue and may even be undergoing a renewal” (p. 12). In fact, many authors attempt to identify the reasons for which the golden age (“Systems Age”) of systems theory has ended or, at least, why certain aspirations have been left behind. For instance, Pouvreau suggests that in Bertalanffy’s “own discipline molecular biology was being strongly promoted, a development rather unfavorable to his systemic biotheory” (p. 122). McMurry also feels himself obligated to explain why literary studies remain disdainful of

concepts drawn from systems theories (p. 264). While summarizing the article of Olkowski, Arnold claims that “some of the basic ideas of chaos and complexity theory ... in many areas eclipsed original systems theoretical positions” and “dynamic system model ... is certainly one of the areas in which systems theory is alive” (p. 257). Obviously, the latter remark implies that many other fields of systems theory are already dead, however, it is left uncertain which ones. Unfortunately, this obscurity regarding the current state and validity of systems theory runs through the book. A more detailed view on the institutional and organizational history of systems theory might be of interest in solving this puzzle. Secondly, it is regrettable that systems theory is presented as an intellectual project limited to the USA, Germany and the United Kingdom, that is to say, that its non-Western impact is not taken into account. For instance, systems theory was extremely influential in Eastern Europe, especially in Hungary, Poland, Czechoslovakia and the Soviet Union. Surprisingly, *Traditions of Systems Theory* mentions the link between systems theories and Buddhism three times (firstly, Arnold emphasizes that cybernetic and systems-theoretic constructivism is often “Buddhist instrumentalist” in orientation (p. 15); secondly, Glanville compares the cybernetic concept of responsiveness and control to Buddhist approaches (p. 61); thirdly, in the context of Varela’s ethical theory, Mugerauer refers to Buddhist views of “no self”, mindfulness and non-dualism), however, this remains an unexplained association. Furthermore, it is completely incomprehensible how the phrase “the aggression of the Islamic civilization” (p. 305) could appear in a book like this. Although Peter Finke completes the phrase by adding that this aggression “can be understood as a reaction to another more subtle aggression”, the phrase is still simply meaningless, insulting and unacceptable. Finally, the cybernetics of Gregory Bateson certainly deserved an article of its own – an improvised Skype conversation cannot serve as an adequate substitute.

Given the depth and length of the volume, I have only been able to scratch its surface in this review. Overall, the editor Darrell P. Arnold has done an excellent job. He managed to provide a book summarizing the very complex field of systems theory without needlessly forcing a unified all-comprehensive account. The volume testifies to the amazing richness of a partially unacknowledged and hidden tradition and, as such, it is a splendid achievement. It gives a most impressive picture of the myriad forms of this field and might serve as an excellent resource for students

and scholars. The spirit of *Traditions of Systems Theory* is that of conceptual precision, awareness of the theoretical sources and revitalization. This is an admirably well-edited and well-structured book, creatively blending historical and theoretical perspectives. It is worth reading for anyone interested in the intellectual history of the twentieth century. What this book strongly confirms is that the tradition of systems theory is inevitable for those who want to understand the veiled background of the way we think today.