Publication Review

Recent Books and Articles Related to Constructivist Approaches

> Upshot • This section lists publications related to constructivist approaches – constructivism, second-order cybernetics, enaction, non-dualism, biology of cognition, neurophenomenology etc. - that recently have been published elsewhere, and which the reader of the journal might find interesting. The entries are ordered alphabetically and clustered according to their respective primary disciplinary backgrounds or application. The increasingly extending bibliography and the Constructivist E-Print Archive (CEPA) can be consulted at http://cepa.info

Artificial life

> Aguilar W., Santamaría-Bonfil G., Froese T. & Gershenson C. (2014) The past, present, and future of artificial life. Frontiers in Robotics and AI 1:8.

>> For millennia people have wondered what makes the living different from the non-living. Beginning in the mid-1980s, artificial life has studied living systems using a synthetic approach: build life in order to understand it better, be it by means of software, hardware, or wetware. This review provides a summary of the advances that led to the development of artificial life, its current research topics, and open problems and opportunities. We classify artificial life research into 14 themes: origins of life, autonomy, self-organization, adaptation (including evolution, development, and learning), ecology, artificial societies, behavior, computational biology, artificial chemistries, information, living technology, art, and philosophy. Being interdisciplinary, artificial life seems to be losing its boundaries and merging with other fields. > Relevance: Artificial life has contributed to philosophy of biology and of cognitive science, thus making it an important field related to constructivism.

http://journal.frontiersin.org/Journal/10.3389/ frobt.2014.00008/abstract

> Beer R. (2004) Autopoiesis and cognition in the game of life. Artificial Life 10:309-326.

>> Maturana and Varela's notion of autopoiesis has the potential to transform the conceptual foundation of biology as well as the cognitive, behavioral, and brain sciences. In order to fully realize this potential,

however, the concept of autopoiesis and its many consequences require significant further theoretical and empirical development. A crucial step in this direction is the formulation and analysis of models of autopoietic systems. This article sketches the beginnings of such a project by examining a glider from Conway's game of life in autopoietic terms. Such analyses can clarify some of the key ideas underlying autopoiesis and draw attention to some of the central open issues. This article also examines the relationship between an autopoietic perspective on cognition and recent work on dynamical approaches to the behavior and cognition of situated, embodied agents. > Relevance: The article focuses on the theory of autopoiesis and related concepts such as structural coupling and cognitive domain.

http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1 .1.2.2757 · http://cepa.info/1143

Biology

> Razeto-Barry P. (2012) Autopoiesis 40 years later: A review and a reformulation. Origins of Life and Evolution of Biospheres 42: 543-567.

>> The concept of autopoiesis was proposed 40 years ago as a definition of a living being, with the aim of providing a unifying concept for biology. The concept has also been extended to the theory of knowledge and to different areas of the social and behavioral sciences. Given some ambiguities of the original definitions of autopoiesis, the concept has been criticized and has been interpreted in diverse and even contradictory ways, which has prevented its integration into the biological sciences where it

originated. Here I present a critical review and conceptual analysis of the definition of autopoiesis, and propose a new definition that is more precise, clear, and concise than the original ones. I argue that the difficulty in understanding the term lies in its refined conceptual subtlety and not, as has been claimed by some authors, because it is a vacuous, trivial or very complex concept. I also relate the concept of autopoiesis to the concepts of closed systems, boundaries, homeostasis, self-reproduction, causal circularity, organization, and multicellularity. I show that under my proposed definition the concept of a molecular autopoietic system is a good demarcation criterion of a living being, allowing its general integration into the biological sciences and enhancing its interdisciplinary use. > **Relevance**: The article deals with autopoiesis and related concepts. https://www.researchgate.net/

publication/232231194 · http://cepa.info/1144

> Rudrauf D. Lutz A. Cosmelli D. Lachaux J. P. & Le Van Quyen M. (2003) From autopoiesis to neurophenomenology: Francisco varela's exploration of the biophysics of being. Biological Research 36:27-65.

>> Francisco Varela's original approach to this "hard problem" presents a subjectivity that is radically intertwined with its biological and physical roots. It must be understood within the framework of his theory of a concrete, embodied dynamics, grounded in his general theory of autonomous systems. Through concepts and paradigms such as biological autonomy, embodiment and neurophenomenology, the article explores the multiple levels of circular causality assumed by Varela to play a fundamental

http://www.univie.ac.at/constructivism/journal/10/1/163.review

role in the emergence of human experience. The concept of biological autonomy provides the necessary and sufficient conditions for characterizing biological life and identity as an emergent and circular self-producing process. Embodiment provides a systemic and dynamical framework for understanding how a cognitive entity - a mind - can arise in an organism in the midst of its operational cycles of internal regulation and ongoing sensorimotor coupling. Global subjective properties can emerge at different levels from the interactions of components and can reciprocally constrain local processes through an ongoing, recursive morphodynamics. Neurophenomenology is a supplementary step in the study of consciousness. Through a rigorous method, it advocates the careful examination of experience with first-person methodologies. It attempts to create heuristic mutual constraints between biophysical data and data produced by accounts of subjective experience. The aim is to explicitly ground the active and disciplined insight the subject has about his/ her experience in a biophysical emergent process. Finally, we discuss Varela's essential contribution to our understanding of the generation of consciousness in the framework of what we call his "biophysics of being." > Relevance: This paper reviews in detail Francisco Varela's work on subjectivity and consciousness in the biological sciences. http://dx.doi.org/10.4067/S0716-97602003000100005

Cognitive Science

> Froese A. & Stewart J. (2013) Enactive cognitive science and biology of cognition: A response to Humberto Maturana. Cybernetics and Human Knowing 19(4): 61–74.

>> Although the concept must be further clarified, the enactive approach is generally sympathetic to many central insights of Maturana's biology of cognition. In particular, it agrees with the criticisms against the mainstream internalist-representationalist theories of life and mind, and it therefore strives to develop an alternative theory that better takes our biological existence into account. At the same time it recognizes our pre-reflective embodiment in what Maturana calls our praxis of living, and it aims to integrate phenomenology and science in order to ensure that we always remain aware of the distinction between phenomenon and theory. **> Relevance:** We claim that the concept of autopoiesis has a valuable role to play in the enactive approach to cognitive science.

http://froese.files.wordpress.com/2013/01/froesestewart-13-enactive-cognitive-science-and-biology-ofcognition.pdf

Communication Science

> Bartesaghi M. (2014) Coordination: Examining weather as a 'matter of concern.' Communication Studies 65: 535–557.

>> I employ spoken and written discourse and extended excerpts from teleconferences between local, state, and federal officials in the midst of Hurricane Katrina to examine the term coordination as one powerful way of accounting for and pragmatically (re) constructing weather in crisis discourse. By means of discourse analysis, I find that the indexical term coordination is part of a metadiscursive vocabulary of disaster, and that, though it performs important social functions in the communication of accountability, authority, and redress, it has very little to do with communicating about weather itself. My conclusion presses for a discursive approach as a means of recovering and understanding social ontologies like weather and the way we materially organize around themes what Latour refers to "matters of concern." > Relevance: It analyzes how notions of weather and disaster are constructed in language.

https://www.academia.edu/8827741

> Clarke B. (2014) John Lilly, The Mind of the Dolphin, and Communication Out of Bounds. Communication +1 3: article 8.

>> In this essay I develop a systems-theoretical observation of John Lilly's cybernetics of communication in his 1967 work "The Mind of the Dolphin." The eight-yearold project that "The Mind of the Dolphin" recounts for public consumption details his aspiration to achieve an unprecedented breakthrough beyond companionate communion to fully abstract linguistic communication across species boundaries. Between 1959 and 1968 Lilly wagered and lost his mainstream scientific career largely over this audacious, ultimately inconclusive bid to establish and document for scientific validation "communication with a nonhuman mind." In that effort, however, he mobilized the best available tools, a cutting-edge array of cybernetic concepts. He leaned heavily on the information theory bound up with firstorder cybernetics and operated with heuristic computational metaphors alongside the actual computers of his era. > Relevance: As I will elicit through some close readings of his texts, Lilly also homed in on crucial epistemological renovations with a constructivist redescription of cognition that may have influenced and motivated his colleague Heinz von Foerster's more renowned formulations, arriving in the early 1970s, of a second-order cybernetics.

http://scholarworks.umass.edu/cpo/vol3/iss1/8

> Gash H. (2013) Fixed or probable ideas. Foundations of Science 19(3): 283–284.

>> This commentary concerns Nescolarde-Selva and Usó-Doménech's paper on a semiotic model of ideologies. The commentary raises questions about the dynamic versus static nature of the model proposed, and in addition asks whether the model might be used to explain ethical flexibility and rigidity. The semiotic model is a mathematical one and a constructivist approach is evident. > Relevance: This approach is clearly constructivist and concerns mathematical modelling of semiotics. http://cepa.info/894

Cultural Studies

> Graf H. (2012) Examining garden blogs as a communication system. International Journal of Communication 6: 2758–2779.

>> The blogosphere supports an interpersonal meaning production process by providing the space and opportunities for communication through the circulation and discussion of topics. I explore how garden bloggers issue invitations to communicate by studying their selection process from all possible entries and images. I examine the

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selection criteria for posting an entry and especially look at Swedish and German garden blogs to study "ordinary" people's relations in the blogosphere from the perspective of sharing opinions, impressions, and emotions about their garden environment. As a result, the selection criteria of novelty, values, identification, conflicts, visuality, and sociality are revealed. A communicative culture of approval, admiration, and respect, which promotes emotional ties and strengthens the feeling of common concerns in the blogosphere, is noticeably present. > Relevance: This article draws on systems theory as developed by Niklas Luhmann. http://ijoc.org/index.php/ijoc/article/view/1579

> Graf H. (2014) From wasteland to flower bed: Ritual in the website communication of urban activist gardeners. Culture Unbound. Journal of Current Cultural Research 6: 451–471.

>> The goal of this article is to explore the website communication of urban activist gardeners by focusing on the concept of ritual as a heuristic category. In contrast to the majority of those doing research on ritual, I use a systems-theoretical approach in applying the concept of ritual to communication processes. I explore the role played by ritual in communication in order to answer questions such as, "What is specifically unique about the ritual mode of communicating?" and, following from this, "What function do these rituals serve in communication?" My subject, urban garden activism, is thus addressed from the perspective of mediaand communication research. First, I briefly describe urban activist gardening and how communication is usually structured on their websites. Second, I present an outline of some theories and concepts of communication and ritual within media studies, and give a brief account of the systems-theoretical approach that I use. Third, I define some areas of ritual - that is, ritualized patterns of communication found in the urban activist gardeners' empirical material - so as to provide answers regarding the means and function of ritual in communication. > Relevance: The role of ritual is explored from Luhmann's systems-theoretical approach.

http://www.cultureunbound.ep.liu.se/v6/a23/ cu14v6a23.pdf · http://cepa.info/1131

> Schmidt S. J. (2014) Kulturbeschreibung Beschreibungskultur. Umrisse einer Prozess-orientierten Kulturtheorie. Velbrück Wissenschaft, Weilerswist.

>> In contrast to concepts of culture that define culture as the sum of cultural phenomena, I present a process oriented nondualistic concept of culture. It portrays culture as a program for the construction of cultural phenomena in all social systems. On the basis of a constructivist epistemology that focuses on the observer a theory of culture is developed that is not limited to a particular national culture, a particular symbolic domain or a specific period, but which rather shows which problems societies can solve by affording cultural operations. > **Relevance**: The book draws on nondualism and cultural constructivism.

> Stettler R. (2014) The politics of knowledge work in the postindustrial culture: Understanding the dissemination of knowledge of the sciences, humanities, and the arts. Ambra Verlag, Vienna.

>> The author examines work practices and their effects in the post-industrial culture on public understanding and identification with the arts and sciences within a holistic frame of transdisciplinarity. He sees the possibility of cultural change arising from an informed public debate and from adaptations within the ecology of information, which might yield new ideas and forms of practice. The book elaborates a second-order perspective for cultural work that challenges contemporary forms of political power and social control within the framework of construction, production, and distribution. Based on Heinz von Foerster's socio-epistemological second-order model of learning, the book promotes a more anticipatory dynamism based on reflexive inquiries into the construction of longer-term impact, sustainable environment awareness, democratic debate, and improved qualities of individual and social interaction. > Relevance: The book refers to von Foerster's second-order cybernetics.

Epistemology

> Gash H. (2014) Constructivism, truth and reality. Foundations of Science 19(3): 307–309.

>> This commentary to Nescolarde-Selva and Usó-Doménech's "Reality, systems and impure systems" links ideas in their paper to radical constructivism and raises two questions. (1) Would it be helpful to substitute the constructivist notion of viability for the traditional notion of truth with its connotations of relating language and reality? (2) Is the link made to issues in ontological philosophy important since the implicit constructivist epistemology of the paper considers mathematical ideas are just as real as ideas about objects? **> Relevance:** The text builds on Ernst von Glasersfeld's constructivism.

> Stafford R. D. (2013) The foundations of physical reality: Third edition. Alphagraphics, Pearl MS.

>> This book presents a mathematical analysis of explanations. A valid explanation must be self-consistent, and the expectations it generates must be valid. Beyond this, the correctness of any ontology defined by an explanation cannot be investigated. The analysis does not operate with speculative arguments about reality. Instead, it defines a fully general framework where the logical consequences of mere self-consistency can be analyzed. Self-consistency implies symmetries which can be mathematically expressed. That expression is true for any selfconsistent explanation, and it also stands only a few algebraic steps away from the relationships of quantum mechanics, electromagnetism and special relativity. General relativity also arises as an approximated solution, from a framework that is fully consistent with quantum mechanics. The fact that modern physics can be deduced this way implies that physics is not so much about reality as it is about valid mental representations of expectations of reality. The algebraic steps in the analysis represent arbitrary terminology choices, and the rest falls out from self-consistency alone. Expectations can always be expressed in a form where the data is categorized to look like modern physics. Also it is shown that the same expectations can always be expressed in many different but equally valid forms. > Relevance: The book deals with epistemological questions on a constructivist background and portrays "ontological claims," i.e., claims about actual reality as undefendable (belief based) and thus meaningless.

http://foundationsofphysics.blogspot.com

Linguistics

> Kravchenko A. (2014) Two views on the ecology of language and ecolinguistics (in Russian). Экология языка и коммуникативная практика 2: 90–99.

>> It is shown that the definition of the subject area of Haugenian ecolinguistics is methodologically inconsistent because of the implicit biomorphic metaphor, the language myth, and indiscrimination between the two different approaches to language known as cognitive internalism and cognitive externalism. A more consistent definition of language ecology is given, based on the biology of cognition as a theory of living systems; consequently, the subject area of ecolinguistics is defined differently, with a focus on the nature and function of language as a mode of organization of the living system (society) and its role in the development of the brain, thought, and mind. > Relevance: Language ecology is defined, based on the biology of cognition http://ecoling.sfu-kras.ru/wp-content/uploads/2014/09/ Kravchenko-A.V..pdf · http://cepa.info/1128

> Kravchenko A. & Boiko S. (2014) What is happening to Russian? Linguistic change as an ecological process. Russian Journal of Communication 6(5): 1–14.

>> Following the theme of an earlier discussion in the Russian Journal of Communication, the paper offers an alternative to the traditional approach to linguistic change based on the "living organism" metaphor. This metaphor is shown to be inadequate, and massive linguistic change is viewed in the framework of the biology of cognition as an ecological phenomenon, affecting both society and individuals as third-order and second-order living-systems. The driving force behind the changes occurring in Russian, it is suggested, is ecological in nature and consists in mingling semiotic values that serve as points of orientation in two different third-order living-systems with their specific cultures. As a result, one might speak of orientation to a different culture with a different system of values, along with rejection of traditional values, including the value of the Russian language. > **Relevance:** Linguistic change is viewed in the framework of the biology of cognition

Philosophy

> Balsemao E. (2013) The epistemological meaning of luhmann's critique of classical ontology. Systema. Connecting matter, life, culture and technology 1(1): 5–20.

>> This paper is a discussion of the sustainability of a concept of "world" compatible with the "operative constructivism" and the operative conception of observation of systems theory of according to Niklas Luhmann. The paper scrutinizes the concepts of observation of Heinz von Foerster, Humberto Maturana, Gotthard Günther and Luhmann, providing the general framework of "operative constructivism." Particularly, the paper will focus on N. Luhmann's understanding of the role of observation in the constitution of the self-reference of the social systems of the modern society. The case of the "systems of art" will be briefly inspected. What place shall we concede to the idea of an "objective" world, according to the systems theory? Are systems "objective"? According to Luhmann, for the description of systems only operations are "objective." However, an operation is not an entity, which means that we need to depict a new kind of "objects," very different from the 'thing-objectivity" of the ancient metaphysics and different from the Cartesian concept of "res." What does objectivity mean according to systems theory? This question was at stake in the formulation of Luhmann's Die Gesellschaft der Gesellschaft: Society is "weder Subjekt noch Objekt." This paper attempts to address this formula. > Relevance: The paper deals with the epistemological explanation of second-order observations in social systems according to Luhmann's systems theory. It clarifies the world vision of the constructivism movement.

http://www.systema-journal.org/article/view/157 · http://cepa.info/1126

> King R. (2011) Operational closure and philosophy: Ontological and epistemological issues in constructivist systems theories. PLASTIR Transdisciplinary Review of Human Plasticity 24: 31.

>> Use of systems-theoretical concepts is prevalent in 20th century European philosophy, cognitive science, and autopoietic and sociological systems theory. Each of these diverse fields of study can be placed in still closer proximity since each assigns a form of operational closure to systems. Operational closure refers to the capacity of a system to distinguish itself from its environment in order to build up internal complexity through mechanisms of circular causation or recursive feedback. Originally articulated within the theory of Maturana and Varela as a function of autopoietic systems, the concept of operational closure has deeper philosophical roots. Yet it has not been the subject of any intellectual history. This paper provides that history by locating the origin of the concept in Kantian and German idealist philosophy, particularly in the ontology of G. W. F. Hegel, and tracing it to constructivist epistemologies in the 20th century. After establishing the conceptual debt the 20th century systems fields owe to Hegelian ontology, this paper examines the common philosophical problems the concept of operational closure is used to solve in contemporary philosophical accounts of systems and states the epistemological significance of the concept within these fields. > Relevance: Links autopoietic theory - and particularly the concept of operational closure - with some brief mention of Luhmann, to philosophical roots in Hegel and also examines how this concept has been taken up in recent European philosophy. http://plasticites-sciences-arts.org/PLASTIR/King%20 P24.pdf · http://cepa.info/1123

> Thompson E. (2004) Life and mind: From autopoiesis to neurophenomenology. a tribute to francisco varela. Phenomenology and the Cognitive Sciences 3: 381–398.

>> This talk, delivered at "De l"autopoièse à la neurophénoménologie: un hommage à Francisco Varela; from autopoiesis to neurophenomenology: a tribute to Francisco Varela," June 18–20, at the Sorbonne in Paris, explicates several links between Varela's neurophenomenology and his biological con-

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cept of autopoiesis. **> Relevance:** The paper deals with relevant notions such as autopoiesis and neurophenomenology. http://evanthompsondotme.files.wordpress. com/2012/11/pcs-life-and-mind.pdf

> Vanderstraeten R. (2002) Dewey's transactional constructivism. Journal of Philosophy of Education 36: 233–246.

>> In this paper, I argue that John Dewey's analysis of the transaction of organism and environment can be read as an account of the construction processes that lie beneath all human activity. Dewey's work anticipates, if it does not explicitly articulate, much of what is important and interesting about constructivist epistemology and constructivist pedagogy. The paper is devoted to a reconstruction of the formulation of this transactional constructivism, and to an analysis of its consequences for a constructivist understanding of communication and education. > Relevance: The paper is devoted to a reconstruction of the formulation of Dewey's transactional constructivism. http://cepa.info/1134

Sociology

> Balsemao E. (2011) A individuação da sociedade moderna [The individuation of modern society]. Coimbra University Press, Coimbra.

>> The book uses the method and categories of systems theory (inspired by Luhmann) in a scrutiny of the evolution of the main semantic trends of modern society and its influence in the formation of the systemic boundaries of the social systems of society. The book is an investigation of the meaning of the functional differentiation according to its semantic symptoms and evolution. In order to reconstruct the semantic evolution of basic modern socio-economic categories the book is divided according to the three classic branches of the political philosophy of the classic tradition, the Aristotelian division also conserved in Hegel's own distribution of the themes of his "Sittlichkeit" - family, civil society and the state. Thus, in this book the author explores the classic notion of oikós and its opposition to the pólis, the evolution of the concept of utility in modern times and its importance to the formation of the mod-

ern political economy and the economic system as an autonomous functional system, the idea of "civil society," its meaning in the Hegelian description of the social modernity, the fragmentation of XVIIIth century civil society according to the use of the term "Entzweiung" in the Hegelian philosophical vocabulary, and the formation of the concept of the nation as a self-referential condition of the political system. The book finishes with a discussion of Luhmann's theory of functional differentiation and his concept of the political system. > Relevance: The book applies second-order cybernetics to the analysis of the evolution of modern social systems, especially in the case of the formation of selfreferential conditions for the observation and reproduction of the systems. http://www.uc.pt/imprensa_uc/catalogo/ensino/ individuacao · http://cepa.info/1139

> Francovich C. (2010) An interpretation of the continuous adaptation of the self/environment process. International Journal of Interdisciplinary Social Sciences 5: 307–322.

>> Insights into the nondual relationship of organism and environment and their processual nature have resulted in numerous efforts at understanding human behavior and motivation from a holistic and contextual perspective. Meadian social theory, cultural historical activity theory (CHAT), ecological psychology, and some interpretations of complexity theory persist in relating human activity to the wider and more scientifically valid view that a process metaphysics suggests. I would like to articulate a concept from ecological psychology - that of affordance - and relate it to aspects of phenomenology and neuroscience such that interpretations of the self, cognition, and the brain are understood as similar to interpretations of molar behaviors exhibited in social processes. Experience with meditation as a method of joining normal reflective consciousness with "awareness" is described and suggested as a useful tool in coming to better understand the nondual nature of the body. > Relevance: The article directly addresses problems and strategies for conceptualizing and working with nondual phenomena and the paradoxes therein.

https://connect.gonzaga.edu/francovich · http://cepa. info/1129

> Vanderstraeten R. (2001) Observing systems: A cybernetic perspective on system/environment relations. Journal for the Theory of Social Behaviour 31: 297–311.

>> This article first sketches the transition from first-order to second-order cybernetics. Next it presents an analysis of George Spencer Brown's *Laws of Form*. Against this background, Niklas Luhmann's constructivism is afterwards analyzed in more detail. It is thereby shown how second-order observations "work" within modern society. > Relevance: This article presents an analysis of the constructivist position developed by Niklas Luhmann in his late writings.

> Vanderstraeten R. (2005) System and environment: Notes on the autopoiesis of modern society. Systems Research & Behavioral Science 22: 471–481.

>> To describe the basic characteristics of modern society, two levels should be distinguished, viz. the structural and the cultural level. According to the late Talcott Parsons, the dominant value pattern of modern society is the cultural pattern of instrumental activism. What is valued in modern society is not passive adjustment to the exigencies of the environment, but increasing the freedom of action within the environment, and ultimately control over the environment. It is no longer adaptation to the environment, but adaptation of the environment to social needs. On the structural level, new patterns of societal differentiation have emerged. According to Niklas Luhmann, the pattern which characterizes modern society is one of functional differentiation. Functional subsystems impose their particular perspective on the world. The environment is perceived through different lenses (e.g., through a political, legal, economic, educational, or scientific lens). These different perceptions are incommensurable. As a consequence, society cannot control its overall impact on the environment. Its structural and cultural characteristics limit its sensitivity vis-à-vis the environment. > Relevance: This paper provides an overview of Luhmann's analysis of the autopoietic autonomy of the societal system. http://cepa.info/1135

http://www.univie.ac.at/constructivism/journal/10/1/163.review

Wittgenstein as **Philosophical Tone-Poet**

Philosophy and Music in Dialogue

own writing and thought. For Wittgenstein music is not alone, but connects and resonates with our cultural forms of life. His relation to

composers, especially to Richard Wagner and Gustav Mahler, enables

compose music in the breakdown of tradition. Unlike his conservative

experiments. Reflecting on his remarks on music makes it possible to

compare the therapeutic aim of his philosophical activity with that of

music, and thus notice affinities between Wittgenstein and John Cage.

Wittgenstein to address the question of how to do philosophy and

musical sensibility, Wittgenstein's philosophy is open to musical

Béla Szabados

PHILOSOPHICAL TONE-POET Philosophy and Music in Dialogue

This book provides the first in-depth exploration of the importance of music for Ludwig Wittgenstein's life and work. Wittgenstein's remarks on music are essential for understanding his philosophy: they are on the nature of musical understanding, the relation of music to language, the concepts of representation and expression, on melody, irony and aspect-perception, and, on the great composers belonging to the Austrian-German tradition. Biography and philosophy, this work suggests that Wittgenstein was a composer of philosophy who used the musical form as a blueprint for his

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