

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, 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 can be consulted at <http://www.constructivistfoundations.info/bib/>

Artificial intelligence

> **Dodig-Crnkovic G. (2012) The info-computational nature of morphological computing. In: Müller V. C. (ed.) Theory and philosophy of artificial intelligence. Springer, Berlin: 59–68**

>> Morphological computing emerged recently as an approach in robotics aimed at saving robots' computational and other resources by utilizing physical properties of the robotic body to produce and control behavior automatically. The idea is that the morphology of an agent (a living organism or a machine) constrains its possible interactions with the environment as well as its development, including its growth and re-configuration. The nature of morphological computing becomes especially apparent in the info-computational framework, which combines informational structural realism (the idea that the world, for an agent, is an informational structure) with natural computationalism (the view that all of nature forms a network of computational processes). Info-computationalism is a constructivist approach that describes morphological computation as a process of continuous self-structuring of information and shaping of both interactions and informational structures.

<http://www.mrtc.mdh.se/~gdc/work/Info-computationalCharacterOfMorphologicalComputing-2012-01-28-GDC.pdf>

Biography

> **Tötösy de Zepetnek S. & Lisiak A. (2010) Bibliography of Siegfried J. Schmidt's Publications. CLCWeb: Comparative Literature and Culture 12.1**

>> The bibliography is a complete list of Schmidt's work published in print (it excludes his radio texts, CD-ROMs, and his poetry and other fiction).

<http://docs.lib.purdue.edu/clcweb/vol12/iss1/9>

Biology

> **Mossio M., Giuseppe Longo G. & Stewart J. (2012) An expression of closure to efficient causation in terms of lambda-calculus. Journal of Theoretical Biology 257(3): 489–498**

>> In this paper, we propose a mathematical expression of closure to efficient causation in terms of λ -calculus; we argue that this opens up the perspective of developing principled computer simulations of systems closed to efficient causation in an appropriate programming language. We conclude with a brief discussion of the question of whether closure to efficient causation captures all relevant properties of living systems. We suggest that it might not be the case, and that more complex definitions could indeed create some obstacles to computability.

<http://cepa.info/477>

Cognitive science

> **Auvray M., Lenay C. & Stewart J. (2009) Perceptual interactions in a minimalist virtual environment. New Ideas in Psychology 27: 32–47**

>> Minimalism is a useful element in the constructivist arsenal against objectivism. By reducing actions and sensory feedback to a bare minimum, it becomes possible to obtain a complete description of the sensory-motor dynamics; and this in turn reveals that the

object of perception does not pre-exist in itself, but is actually constituted during the process of observation. In this paper, this minimalist approach is deployed for the case of the recognition of "the Other." It is shown that the perception of another intentional subject is based on properties that are intrinsic to the joint perceptual activity itself.

http://www.nstu.net/malika-auvray/files/malika-auvray-auvray_et_al_2009_nip.pdf

> **Montebelli A. (2012) Modeling the role of energy management in embodied cognition. Doctoral dissertation No. 1455, University of Linköping / University of Skövde, Sweden**

>> This thesis advocates a perspective on embodiment that emphasizes the role of non-neural bodily dynamics in the constitution of cognitive processes in both natural and artificial systems. In the first part, it critically examines the theoretical positions – including cybernetic, autopoietic and enactive approaches – that have influenced current theories and the author's own position. The second part presents the author's experimental work, based on the computer simulation of simple robotic agents engaged in energy-related tasks. Proto-metabolic dynamics, modeled on the basis of actual microbial fuel cells for energy generation, constitute the foundations of a powerful motivational engine. Following a history of adaptation, proto-metabolic states bias the robot towards specific behaviors, viably attuned to the current context, and facilitate swift re-adaptation to novel tasks. Proto-metabolic dynamics put the situated nature of the sensorimotor interaction within a perspective that is functional for the maintenance of the robot's overall viability.

<http://urn.kb.se/resolve?urn=urn:nbn:se:liu:diva-77231>

Communication science

> Krippendorff K. (2012) *On communicating, otherness, meaning, and information* (Edited by Fernando Bermejo). Routledge, New York

>> The book features 18 of Klaus Krippendorff's key papers on constructivist, second-order cybernetics, and dialogical approaches to social phenomena, organized in four sections. Part 1 offers a sketch of social constructivism, epistemological and conceptual issues of communication. Part 2 concerns the otherness that theorizing creates, the use of pronouns in social relations, power and emancipation. Part 3 critiques semiotics from a constructivist perspective, develops conceptions to come to grips with cultural artifacts and proposes a theory of discourse. Part 4 reviews information theory, and applies it to research processes, the internet and cyberspace more generally and to social memory.

Education science

> Alhadeff-Jones M. (2012) *Transformative learning and the challenges of complexity*. In: Taylor E. W., Cranton P. & Associates (eds.) *Handbook of transformative learning: Theory, research and practice*. Jossey-Bass, San Francisco: 178–194

>> In order to illustrate what is at stake in the definition and in the development of a complex and constructivist epistemology of transformative learning, this chapter introduces Edgar Morin's paradigm of complexity and explores six challenges that appear particularly illustrative with regards to the advance of research and practices related to transformative learning.

http://columbia.academia.edu/MichelAlhadeffJones/Papers/1697711/Transformative_Learning_and_the_Challenges_of_Complexity

> Carneiro F. & Leurquin E. (2011) *The social dimensions of human development and pedagogical action: Language and emancipation in schools*. *Nonada* 2(17)

>> The article presents the reflection brought about by the group of thinkers that is commonly named Social Interaction-

ism upon the social-historical basis of human development. Social Interactionism maintains that the construction of human conscious thinking must be addressed in parallel with the issue of the construction of social facts and cultural constructs. The concepts of meaning and representation are analyzed, as well as their relation with the formative school activity.

<http://seer.uniritter.edu.br/index.php/nonada/article/view/375/234>

> Taber K. S. (2012) *Constructivism as educational theory: Contingency in learning, and optimally guided instruction*. In: Hassaskhah J. (ed.) *Educational theory*. Nova, New York: 39–61

>> This chapter sets out the basis of one version of constructivism that is informed by findings from both cognitive science and from educational studies exploring learners' thinking about curriculum topics and about classroom processes. A key concept here is the way in which new learning is contingent on features of the learner, the learning context and the teaching. It offers a theoretical basis for designing effective pedagogy that is accessible to classroom teachers. The chapter will explain that although constructivism understood this way certainly offers the basis for learner-centered teaching, it is far from "minimally-guided" instruction. Rather, a feature of this approach is that it does not adopt doctrinaire allegiance to particular levels of teacher input (as can be the case with teaching through discovery learning, or direct instruction) but rather the level of teacher guidance (a) is determined for particular learning activities by considering the learners and the material to be learnt, and (b) shifts across sequences of teaching and learning episodes, and includes potential for highly structured guidance, as well as more exploratory activities.

> Walker B. M. (2012) *The joint experiment of research supervision*. In: Butler R. J. (ed.) *Reflections in personal construct theory*. Wiley-Blackwell, Chichester: 389–401

>> The research relationship and process between student and supervisor is viewed as joint experimentation, rather than more traditionally as novice and expert. Particular focus is placed on what happens when

the experimentation breaks down. Three common problems are presented, viz. being overwhelmed by the magnitude of events, muddled writing, and emotions disrupting the thesis process. Taking a reflective approach drawn from personal construct psychology, practical suggestions are provided for overcoming these blocks. Finally, an example of a pattern that is not uncommon, but is not easily able to be dealt with, is outlined in the anticipation that its clarification may be useful to future students and supervisors.

Interdisciplinary

> Krippendorff K. (2012) *Discourse and the materiality of its artifacts*. In: Kuhn G. R. (ed.) *Matters of communication: Political, cultural, and technological challenges to communication theorizing*. Hampton Press: 23–46

>> This paper seeks to reenter the often forgotten material basis of human interaction, whether it is in writing or in designing technological artifacts. Materiality has properties quite unlike language and cognition and makes itself manifest in ways rarely considered in constructivism, the social sciences, and communication.

http://repository.upenn.edu/asc_papers/259

> Baerveldt C. & Verheggen T. (2012) *Enactivism*. In: Valsiner J. (ed.) *Oxford handbook of culture and psychology*. Oxford University Press, New York: 165–190

>> Enactivism is an emerging perspective both in cognitive science and in cultural psychology. Whereas the enactive approach in general has focused on sense-making as an embodied and situated activity, enactive cultural psychology emphasizes the expressive and dynamically enacted nature of cultural meaning. This chapter first situates enactivism within a tradition of expressivist thinking that has historical roots both in radical Enlightenment thought and Romantic reactions against the rationalization of human nature. It will then offer a view of our human biology that can be reconciled with an account of meaning as irreducibly normative. By emphasizing the consensual rather than the supposedly shared nature of meaning-

ful conduct, enactivism avoids some of the classical pitfalls in thinking about culture. In the conclusion a genetic enactive psychology will be presented, which understands sense-making not as a mediated activity, but as a competence acquired through cultural training and personal stylization.

<http://ualberta.academia.edu/CorBaerveldt/Papers/279623/Enactivism>

> **Dodig Crnkovic G. (2012) Physical computation as dynamics of form that glues everything together. *Information 3(2): 204–218***

>> A framework is proposed where matter can be seen as related to energy in the way that structure relates to process and information relates to computation. In this scheme, matter corresponds to a structure, which corresponds to information. Energy corresponds to the ability to carry out a process, which corresponds to computation. The relationship between each two complementary parts of each dichotomous pair (matter/energy, structure/process, information/computation) is analogous to the relationship between being and becoming, where being is the persistence of an existing structure while becoming is the emergence of a new structure through the process of interactions. This approach presents a suitable basis for incorporating current developments in the understanding of biological/cognitive/social systems as generated by complexification of physicochemical processes through self-organization of molecules into dynamic adaptive complex systems by morphogenesis, adaptation, and learning. The info-computational approach is constructivist in nature – it provides a generative mechanism for constructing reality from two basic principles – information and computation.

<http://www.mdpi.com/2078-2489/3/2/204/pdf>

> **Le Coze J. C. (2012) Towards a constructivist program in safety. *Safety Science 50(9): 1873–1887*.**

>> This paper delves into the relationship between safety and constructivism. The constructivist discourse is popular but also controversial as it challenges some key categories associated with modernity, such as reason, objectivity, truth or reality. In the safety literature, several works advocate its use. This

paper has three objectives. Firstly, it reveals the existence of a constructivist discourse in the field of safety by putting together scattered pieces of works from different authors who endorse and apply to various topics a position labeled as constructivist. Secondly, it demonstrates that there is not only one constructivism, but several. Proceeding with a multidisciplinary and historical approach, it is argued that it is more appropriate not to conflate this diversity of constructivisms. The paper provides a classification based on two groups of parameters: mild/strong and cognitive/social, defining four types. This step serves the third objective, which consists of initiating a multifaceted constructivist program in safety composed of heterogeneous but related empirical and theoretical areas of investigations.

<http://cepa.info/472>

> **Walker B. M. & Crittenden N. (2012) The use of laddering: Techniques, applications and problems. In: Caputi P., Viney L. L., Walker B. M. & Crittenden N. (eds.) *Personal construct methodology*. Wiley-Blackwell, Chichester: 71–87**

>> This chapter provides a clear understanding of the process of laddering, a powerful technique designed to elicit constructions of the world in increasingly superordinate order. Its developmental history, beginning with Hinkle's landmark thesis on approaching change and resistance to change within a constructivist framework, is described and its utility for the exploration of hierarchical construing by practitioners and researchers from a wide range of areas (including psychology, psychotherapy and counseling, marketing, education and organizational understanding) is illustrated. Problems with its application are outlined, along with suggested solutions.

Linguistics

> **Kravchenko A. V. (2012) Grammar as semiosis and cognitive dynamics. In: Kravchenko A. V. (ed.) *Cognitive dynamics in linguistic interactions*. Cambridge Scholars Publishing, Newcastle upon Tyne: 125–153**

>> A critique of the traditional dualistic view of grammar as linguistics is given,

and an approach is suggested that emphasizes the relational nature of linguistic signs in the framework of the biology of cognition. Using the epistemological lining in the study of language provided by the biology of cognition, grammar studies should take into account the cognitive dynamics of languaging as consensual coordinations of consensual coordinations of behavior, or, semiosis.

<http://cepa.info/480>

Philosophy

> **Bich L. (2012) Complex emergence and the living organization: an epistemological framework for biology. *Synthese 185(2): 215–232***

>> In this article a constructivist framework is proposed in order to integrate emergentist thought with systemic studies on biological autonomy – specifically: the autopoietic theory – which are focused on the role of organization. A particular attention is paid to the role of the observer's activity, especially to the different operations he performs in order to identify the pertinent elements at each descriptive level and to the relationships between the different models he builds from them. An epistemological notion of emergence as non-derivability – that of “complex emergence” – is introduced, that allows a) a distinction between autonomy and self-organization, and b) a reinterpretation of downward causation not as a direct or indirect influence of the whole on its parts, but instead as an epistemological problem of interaction between descriptive domains.

<http://leonardobich.files.wordpress.com/2011/06/bich-complex-emergence-synthese-2010.pdf>

> **Navarro M. G. (2012) Epistemología, razonamiento y cognición en el debate historiográfico constructivismo vs reconstruccionismo [Epistemology, reasoning and cognition in the historiographical debate on constructivism vs reconstruccionismo]. *Universitas Philosophica 57: 163–187***

>> Some authors, such as Jenkins and González de Oleaga, maintain that historical research is an effect of a specific historiographical context. An approach to the

historiographical debate between constructivism and reconstructivism is presented in this paper. Two theses are here defended. The first one affirms that the above mentioned debate is deeply related to epistemological questions (study of mental representations, different conceptions about historical reasoning functions, historical reasoning, cognitive bias, and informal fallacies). The second thesis affirms that each historiographical conception can be understood as the effect of assuming a specific perspective on these epistemic questions. As evidence of this, some connections between historiography and epistemology will be analyzed through the analogy between the reconstructivism vs. constructivism debate, and the epistemological debate on detectivism vs. constitutivism.

<http://cepa.info/481>

> Staude M. (2012) *Meaning in communication, cognition, and reality. Outline of a theory from semiotics, philosophy, and sociology.* Imprint Academic, Exeter

>> The book presents a general and formal theory of meaning, signs, and language. Its philosophical base rests on a constructivist and non-dualist approach that leads to an ontological monism of meaning or language. The theory offers novel and provocative insights into the fundamental structures and processes of communication, cognition, and reality. Key topics include the construction and use of distinctions and categories, the self-contradictory dualism of word vs. object, linguistic meaning monism, interpretive relations and processes in the semiotic triangle, conceptual prototypicality and fuzziness, semantic fields and frames, meaning medium vs. forms, as well as activation and co-activation of meanings. In order to illustrate and apply the theory, everyday examples, in particular power and law, are discussed throughout the book. Methodological questions of data collection and analysis are also addressed as they are relevant to the empirical application and verification of the theory.

[www.diss.fu-berlin.de/diss/servlets/](http://www.diss.fu-berlin.de/diss/servlets/MCRFileNodeServlet/FUDISS_derivate_000000011082/Staude_2012_Meaning_and_Meaning_Fields.pdf)

[MCRFileNodeServlet/FUDISS_derivate_000000011082/Staude_2012_Meaning_and_Meaning_Fields.pdf](http://www.diss.fu-berlin.de/diss/servlets/MCRFileNodeServlet/FUDISS_derivate_000000011082/Staude_2012_Meaning_and_Meaning_Fields.pdf)

Psychotherapy

> Raskin J. D. (2012) *Evolutionary constructivism and humanistic psychology.* *Journal of Theoretical and Philosophical Psychology* 32(2): 119–133

>> An evolutionary constructivist approach combining Donald Campbell's selection theory (also known as evolutionary epistemology) with constructivist theories is discussed as it pertains to four issues typically associated with humanistic approaches to psychology: (a) embodiment, (b) agency, (c) human science, and (d) becoming. Ways in which selection theory informs these four issues by adding a naturalistic approach to the usual humanities-oriented emphasis of humanistic psychology are presented.

> Feixas G., Montebruno C., Dada G., Del Castillo M. & Compañ, V. (2012) *Self construction, cognitive conflicts and polarization in bulimia nervosa.* *International Journal of Clinical and Health Psychology* 10: 445–457

>> This study explores the cognitive structures, understood as construct systems, of patients suffering from bulimia nervosa (BN). Previous studies investigated the construct systems of disordered eaters suggesting that they had a higher distance between their construction of the self and the "ideal self," and also more rigidity. In addition to these aspects, this study explored the presence of implicative dilemmas (ID). In BN patients it was more common (71.9%) to find IDs than in controls (18.8%). They also showed higher polarization and higher self-ideal discrepancies (even more for those with a long history of BN). The measures provided by the Repertory Grid Technique can be useful for the assessment of self-construction and cognitive conflicts in BN patients and to appreciate their role in this disorder. It could also be helpful for clinicians to explore the patient's constructs system, and especially to identify IDs that could be maintaining the symptoms or hindering change in order to focus on them to facilitate improvement.

http://www.aepc.es/ijchp/articulos_pdf/ijchp-360.pdf

> Feixas G., Saúl, L. A. & Ávila A. (2012) *Viewing cognitive conflicts as dilemmas: Implications for mental health.* *Journal of Constructivist Psychology* 22: 141–169

>> The idea that internal conflicts play a significant role in mental health has been extensively addressed in various psychological traditions. In the context of personal construct theory, several measures of conflict have been operationalized using the repertory grid technique. All of them capture the notion that change, although desirable from the viewpoint of a given set of constructs, becomes undesirable from the perspective of other constructs. The goal of this study is to explore the presence of cognitive conflicts in a clinical sample (n = 284) and compare it to a control sample (n = 322). It is also meant to clarify which among the different types of conflict studied provides a greater clinical value and to investigate its relationship to symptom severity (SCL-90-R). Of the types of cognitive conflict studied, implicative dilemmas were the only ones to discriminate between clinical and nonclinical samples. Participants with implicative dilemmas showed higher symptom severity, and those from the clinical sample displayed a higher frequency of dilemmas than those from the nonclinical sample.

[http://www.tandfonline.com/doi/](http://www.tandfonline.com/doi/abs/10.1080/10720530802675755)

[abs/10.1080/10720530802675755](http://www.tandfonline.com/doi/abs/10.1080/10720530802675755)

> Montesano A., Feixas G. & Varlotta N. (2012) *Análisis de contenido de constructos personales en la depresión* [Content analysis of personal constructs in depression]. *Salud Mental* 32: 371–379

>> Kelly's personal construct psychology proposes that attributing meaning to experience is the most fundamental process of human psychological functioning. He describes psychological activity as a continuous process of creating, testing and revising personal theories (usually implicit) that allow people to understand and anticipate events. Depressive mood is highly influenced by the subject's view of him or herself and others, and by the organization of his or her constructs. The content of these personal constructs has received far less attention from researchers. The main goal of this article is to complement the PCP model of depression through the content analysis of personal constructs. The results indicate that content patterns of depressed people show various specific thematic emphases.

<http://www.inprf-cd.org.mx/pdf/sm3205/sm3205371.pdf>

> Ribeiro E., Feixas G., Maia A., Senra J. & Dada G. (2012) Implicative dilemmas, psychopathology and self construction: Changes during the first year in University. *Journal of Constructivist Psychology* 25: 170–180.

>> This article studies the levels of psychological symptoms, problem-solving skills and self-construction in 28 freshmen, as assessed at the beginning and end of their first year at university. The repertory grid technique was used to assess self-ideal discrepancy, cognitive differentiation, and existence of implicative dilemmas. Results showed an improvement in psychological symptoms and self-ideal discrepancy, an increase in differentiation, but no significant differences in problem-solving skills. One or more implicative dilemmas were found in over half of the sample at the initial assessment and only in one-third at the final one, although this difference was not significant. Psychological symptoms at the end of the first year were predicted only by the initial reported symptoms. However, problem-solving skills at the end were predicted by a model including both initial skills and implicative dilemmas at the beginning of the year.

> Saúl, L. A., López-González M. A., Moreno-Pulido A., Compañ, V., Corbella S. & Feixas G. (2012) Bibliometric review of the repertory grid technique: 1998–2007. *Journal of Constructivist Psychology* 25: 112–131

>> This bibliometric review covers the scientific production with or about Kelly's repertory grid technique between 1998 and 2007. 24 bibliographic sources were used to cover a wide range of specialties. We began by drawing up an explicit protocol in which the research terms were detailed. Then we consulted the bibliographic sources, taking into account a specification of inclusion and exclusion criteria. As a result of this process, 973 references were obtained: 468 journal papers, 335 book chapters,

108 doctoral theses, and 62 books. The review also evaluates the types of documents found, the evolution of the number of works published, the repertory grid's fields of application, and the degree of openness to other disciplines. The most relevant authors, their affiliations, countries, and the publication language are also revealed in this article, as well as the major journals contributing to dissemination of the work done with this technique.

Social science

> Baecker D. (2012) What is holding societies together?. *Criticism: A Quarterly for Literature and the Arts* 53 (1): 1–22

>> In the paper we maintain that one way to phrase the title question is to look for the introduction of new media for the distribution of communication as chocks forcing society to develop new structures to both reject and accept possible communication. We develop a kind of media archeology by checking this thesis in the four cases of language, writing, the printing press, and the computer, respectively. We show that four models, the ethnological, the ontological, the functional, and the ecological, help to hold society together by precisely asking the question of how it holds together. The paper is relevant for constructivist approaches because it shows the culture forms that different societies rely on to construct themselves. <http://ssrn.com/abstract=1866570>

> Baecker D. (2012) Systems, network, and culture. *Soziale Systeme* 15 (2): 271–287

>> The paper compares social systems theory and social network theory in terms of what it is they respectively seek to elucidate. Whereas systems theory focuses on problems of difference and reproduction, network theory deals with problems of identity and control, the former privileging communication and the latter action. To understand

their different foci, it may help to keep in mind that systems theory is a child of computing's formative years, whereas the more recent success of network theory, despite its roots in a far older tradition, accompanies the advent of the Internet. The paper goes on to compare the two theories with respect to questions of mathematical modeling, culture, and self-reference, which interestingly are closely related. It proposes a mathematical modeling of culture, which uses Spencer-Brown's notion of form to combine variables of communication, consciousness, and life into one network relying on three systems capable of reproducing themselves. The paper is relevant for constructivist approaches because it shows how systems are constructed relying on networks within their own interpretation as culture.

<http://ssrn.com/abstract=1867444>

> Steiner P. & Stewart J. (2012) From autonomy to heteronomy (and back): The enaction of social life. *Phenomenology and the Cognitive Sciences* 8(4): 527–550

>> This article is based on a strong theoretical definition of a truly social domain, which is always defined by a set of structural norms; moreover, these social structures are not only a set of constraints, but actually constitute the possibility of enacting worlds that would just not exist without them. This view emphasizes the heteronomy of individuals who abide by norms that are impersonal, culturally inherited and to a large extent independent of the individuals. Human beings are socialized through and through; consequently, all human cognition is social cognition. Finally, it appears that fully blown autonomy actually requires heteronomy. It is the acceptance of the constraints of social structures that enables individuals to enter new realms of common meaningfulness. The emergence of social life marks a crucial step in the evolution of cognition; so that at some evolutionary point human cognition cannot but be social cognition.

<http://cepa.info/476>