

## Theorizing and Cognitive Science

Omar Lizardo, Notre Dame University

### Introduction

In a just published edited volume (Swedberg 2014) and a series of recent articles (2012; in this newsletter: 2009, 2010; see also Espeland 2012), Richard Swedberg has made the compelling argument that we must begin to shift our attention away from *theory* (as a finished *product* or object of contemplation and exegesis) to *theorizing* (as the analysis of the creative, but systematic, *process* that results in such products). According to Swedberg (2014: ix):

“There is some reason to believe that the time is now ripe for...[a] sea change from theory to theorizing. One important reason for this has to do with the emergence a few decades ago of cognitive science...Cognitive scientists have by now made good inroads into the mysteries of human thought processes; and the findings point in a...different direction from the kind of logical reasoning that...has stood at the center of...theory in the social sciences. There exist many ways of thinking other than formal reasoning...images, analogies, metaphors, and what in everyday language is called intuition.”

Swedberg’s intervention is in many ways a timely one, and thoroughly consistent with both the recent (and not so recent) “practice” and “pragmatist” turns in social theory (Schatzki et al 2001). This perspective breaks with both positivist *and* humanist approaches to the creative project of producing theory. These two seemingly opposed perspectives actually converge on an ultimately *irrationalist* conceptualization of the task of theorizing. In the positivist view, the irrationalism of theoretical discovery is an embarrassment that must be dealt with by focusing our efforts on objectively justifiable procedures in the so-called context of justification. In the humanistic perspective the irrationalism of theoretical discovery is a virtue to be celebrated, but one that must be forever protected from the profaning glare of explication and analysis.

The new theorizing movement, shares with practice and pragmatist sociologies a rationalistic commitment to view theory as an acquired skill, and thus one that while normally living in the tacit domain can be subject to systematic analysis and ultimately be taught using traditional pedagogical techniques (Vaughan 2014). This is important because explicit allegiance to a romantic irrationalist model of the creative theorist leads to an ultimately anti-democratic conception of theorizing as a non-transferable aptitude, and of the theorist as a select genius who just happens to possess that aptitude.

As noted in the opening quotation, one way in which both Swedberg and other analysts behind the new theorizing movement (e.g. Knorr-Cetina 2014) propose that we move towards the systematic analysis of the theorizing process is by borrowing tools from the disciplinary fields that are in fact in charge of the systematic study of cognition. These include in addition to cognitive psychology and the psychology of reasoning, such fields as cognitive linguistics, the cognitive study of analogical thinking, and cognitive semantics (see Evans and Green 2006 for an introduction).

This move strikes me as the right one to make. If the traditional understanding (whether humanistic or positivist) of theoretical cognition has been resolutely *anti-naturalist*, a move towards a cognitive understanding of theorizing can be understood as part of a larger movement towards *naturalism* in the study of culture and cognition (see e.g. Sperber 1996; Bloch 2013). In this way, the new theorizing movement can be understood as an attempt to develop a *naturalistic understanding of theoretical*

*cognition in social theory*. This approach links nicely with recent moves towards both cognitive science and naturalism in the philosophy and history of science (see e.g. Giere 2010).

As Swedberg (2014) has argued, the first lesson that can be gleaned from this naturalistic understanding of theoretical cognition is that the folk model of the theoretical thinking, namely, as the manipulation of propositional abstractions removed from experience, is misleading. This leads to a related break with the folk model of theory *building*, namely, the development of deductive systems of propositions joined by linkages of logical implication. Instead, the view of thinking that has emerged in recent approaches to cognition can be summarized in one sentence: abstract thought is fundamentally grounded in experience (Barsalou 2010; Lakoff and Johnson 1999). Theoretical thinking, rather than being the manipulation of pre-experiential abstractions, consists precisely in the *generation* of such abstractions from the concrete materials afforded by experience. The explicit delineation of the processes and mechanisms via which abstraction emerges from “modal” symbols grounded in experience (see e.g. Barsalou 2010) may thus hold the key to uncovering the (teachable) dynamics of theorizing.

I would like to focus my attention on the key role that *conceptual metaphors* play in theorizing by providing the link between experientially grounded *source domains* and (relatively) experientially distant *target domains* (Lakoff and Johnson 1999). The basic claim is that cognitive science has moved beyond the literary/aesthetic model of metaphor to a *conceptual* model in which metaphorical thinking serves as the basis of abstract reason. Insofar as theoretical cognition in social theory is precisely such a species of seemingly abstract reason, then it must be grounded in its own set of fundamental conceptual metaphors. If this is the case, considerations of theory in sociology which continue to rely on propositional models of thinking are not capable of shedding light on the nature of theorizing. In this respect, traditional approaches to what theory *is*, are bound to produce the wrong lessons for *theorizing* as a practice.

One important challenge is that we are only exposed to the conventionalized products of theorizing (theory as object or product). This leads us to ignore the huge amount of “backstage cognition” that goes into the generation of such conventionalized metaphorical linkages (the nuts and bolts of theorizing). This is particularly evident in highly conventionalized conceptual metaphors like ‘Society is a network’, and even for now “discredited” classical metaphors such as ‘Society is an organism.’. In this respect, conventional theoretical finished products must be treated as complex objects to be reverse-engineered (see e.g. Lakoff and Johnson 1999 on “philosophical idea analysis”). This reverse-engineering process would in its turn uncover the complex process of meaning construction (theorizing) that went into the generation of the analogy. The study of theorizing would thus benefit greatly from the cognitive reverse-engineering of “classic” conceptual metaphors (and interlinked “chains” of such conceptual metaphors) since they disclose the creative discovery work that went into their construction and might provide general lessons for how to go about constructing better and more appropriate conceptual metaphors useful for our own theorizing endeavors.

[Figure 1 Here]

### **Reverse engineering a classic conceptual metaphor chain in social theory**

Figure 1 shows a diagram of the conceptual metaphor that links the “organism analogy” (Levine 1995) to such consequential theoretical innovations as the notion of societies as “systems” or “networks.” The diagram is to be read roughly chronologically, taking us from the end of the nineteenth century (when the organism metaphor still dominated the thought of such figures as Durkheim and

Schaffle) to the middle of the twentieth century. Conceptual metaphor chains are formed via metaphorical extensions from a (usually concrete) *source domain* to a less experientially available *target domain* (represented by a solid, asymmetric, horizontal arrow). Once two domains have been linked via conceptual metaphor, the shared structure that motivated the linkage between two domains becomes available for cognitive manipulation. This results in the induction of a schema (representing that shared structure). This is represented in the figure by an upwards pointing broken arrow. Once a schema has been induced, then it is available for the purposes of *categorizing* lower order (less abstract) elements. In the figure, elements are arranged from the top down on a gradient of decreasing abstraction. The elements enclosed in boxes with solid, thicker lines are those that are the most *cognitively intuitive* (experience near) members of the conceptual metaphor chain; elements enclosed in boxes drawn with lighter, broken lines represent less intuitive (experience distant) members of the overall conceptual metaphor chain. Less intuitive members of the conceptual chain are conceptualized via asymmetric conceptual metaphors that link them to more intuitive ones.

The figure is meant to illustrate that the most consequential conceptual extension in the history of sociological theory comes from 19th century organicism and the so-called “organism” analogy (Levine 1995). This is represented as the metaphorical conceptualization of society as a “type” of organism. The link goes from the source domain **organism** to the target domain **society**, this now opens up the opportunity for theorists to develop a super-ordinate schema that captures some higher-level feature that is shared by both societies and organisms. This results in the extraction of a high-level schematic features (schema induction) as a candidate to play that role: the fact that both organisms and societies have a “structure” that sustains itself over time (Radcliffe-Brown 1940).

*Social Structures.*- The conceptualization of **social structure** as a concrete, observable “network” of “actually existing relations” was first made explicit and central to sociological structuralism by Radcliffe-Brown (1940: 2), in his influential (and ultimately canonical) definition of social structure. This definition was taken almost without modification by network structuralists such as Blau (1974) and survives to this day almost intact in network theory. Even though Radcliffe-Brown’s definition sounds “abstract” and non-analogical in his use of such scientific-sounding terms as “pattern” and “network” and his empiricist claim that structures were clearly out there for anybody to see, it is clear that Radcliffe-Brown had to conceptually rely on the organism analogy for his fundamental conceptualization of structure as a concrete pattern which in fact (partially) transcended what could be directly observed by the analyst at any given point in time.

Radcliffe-Brown was actually refreshingly reflexive about this, when he noted that “ analogies, properly used, are important aids to scientific thinking and there is a real and significant analogy between organic structure and social structure” (1940: 6). Thus, the source domain of **organic structure** was used as a metaphorical resource to conceive of the hard to intuit target domain of **social structure**. Once these two domains are linked, then the analyst can induce the schema that extracts what they have in common: both organic and social structures are “really existing” **networks of relations** wherein parts are joined into structured wholes.

Here is how Radcliffe-Brown sets up the structural analogy between the two domains:

Social structures are just as real as are individual organisms. A complex organism is a collection of living cells and interstitial fluids arranged in a certain structure; and a living cell is similarly a structural arrangement of complex molecules. The physiological and psychological phenomena that we observe in the lives of organisms are not simply the result of the nature of the constituent molecules or atoms of which the organism is built up, but are the result of the

structure in which they are united. So also the social phenomena which we observe in any human society are not the immediate result of the nature of individual human beings, but are the result of the social structure by which they are united (1940: 3).

*Social Systems.* - The other consequential metaphorical extension emerging from organism metaphor is the one that results in sociological systems functionalism. The difference is that while the British functionalists were content to rest with a somewhat abstract notion of “structure” based on anatomical organization (paying only lip service to the dynamic or “physiological” entailments of the metaphor), Parsons extracts a more holistic (feature-rich) schema for organisms as **biological systems** and uses it as a metaphorical source domain with which to conceptualize the more abstract target domain of **social systems**. This schema for organisms was more detailed than the one that only schematized their anatomical organization, since it specified both structural and “physiological” components in the source domain and projected these features onto **social systems** in the target domain. Under this rendering, organisms were seen as both organized wholes decomposable into parts (as with the British anthropological functionalists) and as homeostatic, feedback-processing, pattern-maintaining “systems” in relations of material and informational exchange with an external environment (Parsons 1968).

Gouldner (1973: 190) points out that “[t]he recurrent use of organicist models” is justified by “the fact that organisms are *examples* of systems. To the extent that the organicist model has proved fruitful in sociological analysis it has been so because the organism was a paradigmatic case of a system.” In terms of contemporary models of categorization, we can interpret Gouldner’s assertion as implying that (individuated) organisms are the *basic level prototype* for the notion of system. A “system” is the abstract *schematic* representation of an organism, which then may be used to characterize any other entity that shares schematic features with organisms (such as boundedness and patterned organization). Once again, Gouldner (1973: 190) was keenly perceptive in this regard, as he noted that “...the organicist model has been misleading in sociological analysis precisely in so far as it led to a focus on characteristics which were peculiar to the organism but not inherent in the *generalized* [schematic] notion of a ‘system’.”

We can describe this process as a metaphorical extension from the schematized (but still relatively concrete) notion of organisms as **biological systems** to the harder to conceptualize target domain of societies as **social systems**, followed by a second line of upwards schema induction that allows us to extract that which both biological and social systems have in common (they are both **systems of interdependent parts**); hence the hybrid label of structural-functionalism. Once this step is taken it becomes almost impossible for the theorist bent on all-out generalization to resist the temptation to derive a schema subsuming those generalized features that were shared by biological and social systems. This is essentially the generalized systems functionalism of the “middle-period” Parsons (1951), which survives to this day in the form of so-called “systems theory.”

This account sheds (retroductive) light on the reasons why there were in fact two distinct lines of organicist structuralism in twentieth century social theory: the first one is the early line of thinking that emerges from functionalist anthropology and which is essentially concerned with the categorical extension of the notion of “social structure” using organic structure as a source domain in the 1930s and 1940s (Radcliffe-Brown 1940). The second one is the line of “structural-functionalism” that emerges out of sociology in the 1950s and which encompasses both structural and “physiological” features of the organism schema in using a conception of organisms as biological systems as a source domain (Parsons 1951).

## Concluding Remarks

If we are to make progress in moving from theory to theorizing, we must understand the nature of theorizing as a process. Traditional propositional analyses of theorizing are fundamentally misleading in this regard. It is true that there are few social theorists who would actively defend propositional models of reasoning. However, these models continue to be implied in the theoretical *practice* of ignoring the experientially grounded bases of abstract conceptualization and in the continuing treatment of theories as sets of sentences united by links of logical entailment. In contrast to this view, I have proposed that theoretical conceptualization in science relies on the deployment of conceptual resources that are *grounded* in concrete experience, such as analogies, metaphors, and physically instantiated models (Giere 2010). This argument is consistent with recent advances in cognitive science regarding the poverty of propositional models of categorization, conceptualization, and abstraction (Barsalou 2010).

A renewed concern with the mechanics of theorizing leads to the insight that the “logic” that animates even the most abstract of propositions in social theory is non-propositional and built from the creation of systematic correspondences between (relatively) concrete source domains and more abstract target domains. Some of these products of the theoretical imagination may become entrenched and conventionalized in the form of pervasive (or even “dead”) analogies (such as the organism metaphor). Yet, their status as finished products hides the hard work of theoretical imagination and creativity that goes into their construction. Reverse engineering long-standing conceptual metaphors of this sort, such as the Parsonian conceptual metaphor “human agency is effort” (Silver 2011), may lead to both an appreciation of the creative work that went into their construction and towards the emancipation of our own theoretical imagination for the purpose of constructing novel ways of conceiving seemingly “abstract” domains.

## References

- Barsalou, L. W. (2010). Grounded cognition: past, present, and future. *Topics in Cognitive Science*, 2(4), 716-724.
- Blau, P. M. (1974). Presidential address: Parameters of social structure. *American Sociological Review*, 615-635.
- Espeland, W. (2012) Theorizing is a verb. *Perspectives*, 34(2).
- Evans, V., & Green, M. (2006). *Cognitive linguistics: An introduction*. Lawrence Erlbaum Associates Publishers.
- Giere, R. N. (2010). *Explaining science: A cognitive approach*. Chicago.
- Swedberg, R. (2009). The craft of theorizing. *Perspectives*, 31(2).
- Gouldner, A. W. (1973). *For Sociology: renewal and critique in sociology today*. Basic Books, New York.
- Grady, J. E. (1997). Theories are buildings revisited. *Cognitive linguistics*, 8, 267-290.
- Knorr-Cetina, K. (2014). Intuitionist Theorizing. Pp. 29-60 in R. Swedberg (Ed.) *Theorizing in Social Science*. Stanford.
- Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought*. Basic books.
- Levine, D. N. (1995). The organism metaphor in sociology. *Social research*, 62, 239-239.
- Parsons, T. (1951). *The social system*. Free Press, New York.

- Parsons, T. (1968). Systems theory. In *International Encyclopedia of the Social Sciences*. Macmillan and Free Press, New York.
- Radcliffe-Brown, A. R. (1940). On social structure. *Journal of the Anthropological Institute of Great Britain and Ireland*, 1-12.
- Silver, D. (2011). The Moodiness of Action. *Sociological Theory*, 29(3), 199-222.
- Sperber, D. (1996). *Explaining culture: A naturalistic approach*. Blackwell.
- Swedberg, R. (2010). From theory to theorizing. *Perspectives*, 32(2).
- Swedberg, R. (2012). Theorizing in sociology and social science: turning to the context of discovery. *Theory and society*, 41(1), 1-40.
- Swedberg, R. (2014). From Theory to Theorizing. Pp. 1-28 in R. Swedberg (Ed.) *Theorizing in Social Science*. Stanford.
- Vaughan, D.. (2014). Analogy, cases, and comparative social organization. Pp. 61-84 in R. Swedberg (Ed.) *Theorizing in Social Science*. Stanford.
- Schatzki, T. R., Knorr-Cetina, K., & von Savigny, E. (2001). *The Practice Turn in Contemporary Theory*. Routledge.