

# Connecting Radical Constructivism to Social Transformation and Design

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**Purpose:** This paper intends to connect ideas from the radical constructivist approach to cognition and learning to ideas from the constraint-theoretic approach to social policy formulation. It then extends these ideas to a dialogic approach to social transformation and design. **Method:** After demonstrating a correspondence between von Glasersfeld's fit/match distinction and my constraint-oriented/goal-oriented distinction with respect to policy formulation, the paper evaluates the basic assumptions of radical constructivism and builds from them a framework for thinking and talking about a desirable society and ways to participate in its realization. **Findings:** The ideas of von Glasersfeld's radical constructivism contribute significantly to the development of a conceptual base for applied research on social activism by raising new questions and stimulating new thinking.

**Practical implications:** Social activism in everyday affairs can be a way of living in the "world." **Conclusion:** The work and thought of Ernst von Glasersfeld opens a path toward a rich array of concepts and ideas with the potential to inform efforts in a wide variety of human endeavors.

**Key words:** Constructivism, cybernetics, language, dialogic process, social activism.

## Introduction

I first met Ernst von Glasersfeld in 1977 at a joint conference of the Society for General Systems Research and the American Association for the Advancement of Science, in Denver, Colorado. He was participating on a panel chaired by Heinz von Foerster that also included Francisco Varela, Margaret Mead, Joe Goguen and Kenneth Boulding. This was the same conference at which Varela presented his calculus for self-reference (1975). This was also the first academic conference of any type that I had ever attended, and I was, quite frankly, awestruck. While I do not remember much of the content of the panel, I do remember being impressed by how Ernst brought together so many of the disparate ideas I had been studying, and now listening to, into what seemed like a coherent and simple, yet audacious framework. Sitting across from him at lunch that day, I came to realize this framework as the roots of "radical constructivism."

My teacher and mentor at the University of Pennsylvania, Klaus Krippendorff, encouraged me to pursue some of the ideas of radical constructivism in relation to my own research

at the time, which I had labeled "constraint theory." My interest was in using concepts from cybernetics to develop a way of thinking about policy formulation that was radically different than the way I had learned in my studies of operations research. In particular, I found the specification of "desire" in policy models in the form of goals and/or objectives to be inadequate and often dysfunctional; I needed another way to think about values, and the notion of constraint offered such an alternative.

In 1981, I was asked by Stuart Umpleby of George Washington University to organize the program for a conference of the American Society for Cybernetics (ASC) in Washington, DC. It was to be the first such conference of that organization since 1974, so I proposed the theme "The New Cybernetics." One of my first thoughts was that Ernst von Glasersfeld must be invited as a presenter. At this and a series of subsequent conferences, including three Gordon Research Conferences, the second co-chaired by Ernst (with Heinz von Foerster as chair) and the third chaired by Ernst (with Paul Pangaro as co-chair), my appreciation for Ernst's ideas on a variety of subjects, especially language, grew stronger, culminat-

ing in a special ASC conference in 1988 called "Texts in Cybernetic Theory." Rod Donaldson had approached me, as President of the ASC, with an idea for inviting three leading theorists in cybernetics to prepare papers that might summarize key aspects of their thinking, and then organize a conference at which the participants would study and discuss those papers. Rod organized the conference and held it in Felton, California. Ernst was selected to prepare one of the three papers, along with Humberto Maturana and William Powers. That paper, "An Exposition of Radical Constructivism" (1988), is a basic source for some of my thoughts below.

Three other events involving Ernst von Glasersfeld deserve mentioning for their influence on the ideas in this paper. In 1988, Stuart Umpleby organized a team of eight American systems scientists to travel to the Soviet Union for a special conference with eight Soviet systems scientists. I was honored to join Ernst, Donald Campbell, George Klir, and others, as a member of this team. For two weeks, I had the opportunity to get to know Ernst not just as an intellectual giant, but as a person. I found him kind, gentle, and extremely patient, and I couldn't help thinking that there must be a relationship between the ideas he formulated and advocated and his way of being. I have since realized how the predominance of the concept of an external, independent, absolute "truth," as carried in the prevailing languages of the world (not just the West), has contributed to the meanness, impatience, greed, and violence (even war) that we experience in our societies. This concept of truth is antithetical to the tenets of radical constructivism. The conference was held in Tallin, Estonia, and it was there that remarks by Ernst linked his distinction between "fit" and "match" to my constraint theory.

At an ASC conference in Amherst, Massachusetts, in 1991, I gave the opening address

that I had titled “Why I am Not a Cybernetician” (1993). It was intended as a tribute to the great minds of cybernetics, those who demonstrated qualities and insights to which I could aspire but not yet lay claim, including Ernst von Glasersfeld. Ernst gave the address immediately following mine, which he called “Why I Consider Myself a Cybernetician,” later published in *Cybernetics and Human Knowing* (1992). I found it somewhat ironic, given the titles of our presentations, that Ernst cited the cybernetic concept of “constraint” as one of the more important influences on his work.

My most recent encounter with Ernst von Glasersfeld was on the occasion of a visit to his country home in Amherst, where he and his lovely and talented wife Charlotte have lived for a number of years. Judy Lombardi, Mark Enslin, Carol Huang and I made the trip in May 2006 to present Ernst with the Norbert Wiener Medal of the American Society for Cybernetics. We all had a wonderful conversation during which we began to probe some of the assumptions of radical constructivism. That conversation gave me the motivation for the direction I have taken in this paper.

I offer this introduction, in the spirit of a Festschrift, as a way to understand how the ideas presented below have evolved. They did not arise simply by reading books and papers. They are the result of interactions with Ernst von Glasersfeld and numerous others over a period of many years, interactions for which I am sincerely grateful and humbled. Consistent with the ideas of radical constructivism, I make no attempt to “match” my ideas with those of Ernst’s radical constructivism. I do not even claim a “fit”; my attempt is to find a fit between my ideas and my own conception of radical constructivism.

## “Fit” and “match”

In describing what makes radical constructivism *radical*, von Glasersfeld observes:

“This radical difference concerns the relation of knowledge and reality. Whereas in the traditional view of epistemology, as well as of cognitive psychology, this relation is always seen as a more or less picturelike (iconic) correspondence or match, radical constructivism sees it as an

adaptation in the functional sense.” (Glaserfeld 1984, p. 20)

The predominant view in Western epistemology is that knowledge is a *representation* of an external, independent reality, one that through proper inquiry can be approached absolutely. An alternative to the concept of “match” is “fit.”

“A key fits if it opens a lock. The fit describes a capacity of the key, not of the lock. Thanks to professional burglars we know only too well that there are many keys that are shaped quite differently from our own but which nevertheless unlock our doors.” (Glaserfeld 1984, p. 21)

Knowledge arises out of necessity or desire; if it works for us, we accept it and act accordingly. When it doesn’t work, it changes, or adapts, to provide a different fit. That our knowledge fits our needs/desires temporarily does not imply that it is the only knowledge that would fit, nor does it imply that there is any correspondence to an external, independent reality. The idea of an external, independent reality is itself a construct, one that often serves us well. However, application of that construct to cognitive processes and societal affairs has created undesirable, even life-threatening dysfunctions that require a different framework.

## Constraint theory and negative reasoning

The concept of “constraint” was central to the cybernetics of W. Ross Ashby (1956). In particular, he developed a concept of information as a reduction in variety. That is, we say we have information when the possibilities we might have to consider become less than before we had the information; information constrains the possible explanations, outcomes or options available. Ashby also realized that systems consisting of only four or five variables, each of which can take on as few as four or five states, can be astronomically complex. Approaching the analysis of such systems *positively* by trying to isolate the causal relations among the variables is impossible. In his paper “Constraint Analysis of Many-Dimensional Relations” (1964), Ashby suggests that the rigorous investigation of relations in complex systems is more efficiently undertaken by taking a *negative*

approach, i.e., identifying the explanations, outcomes or options that are prohibited by a relationship or subset of relationships than by attempting to determine which outcomes are permitted by the entire set of relationships in all their complexity. Sometimes, a simple set of constraints may be sufficient to provide the information we need to do what we want to do; if not, we continue to probe. While we accept the set of constraints temporarily as bounding the system observed, they are a set of distinctions created by an observer, to deal with a system identified by the observer. They cannot be assumed to represent the objective reality of an external system. They simply work for our purposes.

Gregory Bateson in “Cybernetic Explanation” (1972) uses the term “restraint” instead of “constraint,” referring to the approach of cybernetics as “negative explanation” – focusing on what is not possible or desirable, rather than what is. He challenges the causal theory of biological evolution, stating that tracking of a network of causes and effects is a *positive* approach to explanation that does not work; identifying the restraints that prevented evolution from tracking other pathways is a *negative* approach. von Glasersfeld picks up on this when labeling himself a cybernetician:

“From my point of view, then, what Bateson remarked about the theory of evolution is equally applicable to the *construction of knowledge*, to our *acquisition of language*, and to any interaction that we might call *communication*. None of these developments or activities can be explained in terms of causes, but we can go a long way towards explaining them in terms of constraints. For me, therefore, the world in which we find ourselves living, is the world that we have been able to construct and maintain within the constraints we have so far experienced. –What could be more cybernetic than this?” (von Glasersfeld, 1992, p. 25)

Constraint theory is a way of thinking about complex systems. It has been applied in a number of fields, including managerial decision making processes (“satisficing,” “bounded rationality,” Simon 1964), multidisciplinary systems research and design (Friedman, 1976), analysis of systems structure (Krippendorff 1979), and artificial intelligence (constraint satisfaction, constraint propagation, Dym & Levitt 1991), to name a

few. My interest was in the design of social systems through policy formulation (Richards 1977, 1978, 1983, 1991, Gupta & Richards 1979). I defined policy formulation broadly as any action taken, formal or informal, official or unofficial, with the intent to constrain collective human behavior, whether at a group, organizational, or societal level. Policy constrains behavior, through laws, rules and regulations at one extreme and slogans, admonitions and expressions of principle at the other, and a myriad forms in between.

There is an overlap between this use of the word policy and my use of the word culture; culture also constrains human behavior. However, culture encompasses all those constraints that emerge with no apparent intent, including values, attitudes and preferences. This use of the word culture is not to be confused with the use that refers to the traces left (i.e., artifacts – art, literature, music, science, technology, etc.) from interactive processes operating within the constraints.

It is this overlap between policy and culture that presented my dilemma. Models in support of policy formulation had virtually always dealt with values and desires as either goals (concrete outcomes in time and space) or objectives (single or multiple criteria to be maximized, minimized or otherwise optimized). But, where do these goals and objectives come from, whose are they, and what happens when they change? This *positive* approach to policy formulation (and planning) has been called the “rationalistic” or “analytic” approach. Graham Allison (1971) compared a rational actor model of decision making with organization process and bureaucratic politics models in his analysis of the policies applied during the U.S.–Cuba missile crisis of 1962, and John Steinbruner (1974) compared an analytic paradigm with a cybernetic paradigm in analyzing U.S.–NATO nuclear sharing policies during the period 1956–64. Both Allison and Steinbruner found the “rationalistic/analytic” approach to be inadequate for describing how policies were actually formulated and applied. However, the rationalistic approach still dominates the language of policy-making and therefore constrains the conversations that might otherwise lead to creative and value-rich policy.

My approach was to treat values and desires as constraints – i.e., to formulate that which is not wanted or needed, and to create

processes in which these constraints get discussed and transformed. I called this way of thinking *negative reasoning*, and, when applied specifically to planning exercises, *negative planning*, distinguishing a constraint-oriented approach to policy formulation from a goal-oriented approach. (The word *negative* is used here in the sense of a photographic negative; systems get defined by what they cannot do or by what we do not want them to do, an inversion of the positive.) An application to the personnel policies of a personal finance company, where executives had set high goals for reducing the turnover of loan officer trainees, demonstrated that the executives could actually agree on a much broader range of turnover than they had previously thought by responding to questions about what they “did not want” as consequences of the turnover (Richards 1983). In an application to technology policies of the U.S. National Aeronautics and Space Administration (NASA), an approach to analyzing alternative technologies for a new space transportation system showed that selection of technologies that kept options open for multiple systems (as opposed to an “optimal” system) in 15–20 years, by focusing on what was “not acceptable” in the present, could mitigate the uncertainty of currently unknown technologies that might emerge over that period of time (Richards 1996). (Note: Both of these examples were made possible by access given me to conduct research with the respective organizations. The application of interest in this paper is much broader – namely, the facilitation of participation in social design and transformation by all members of a society.)

Ashby’s mathematical formulation of constraint analysis provided the basis for depicting data on constraints in spatial diagrams that could then be manipulated. The form of the data drove the form of question that could be asked in collecting the data – namely questions about what is unacceptable, rather than what is most preferred. I could then manipulate the diagrams to evaluate alternative policies for their flexibility and robustness. When I presented some of these constraint diagrams in Tallin, Estonia (Richards 1988), Ernst remarked that they reminded him of the key and lock metaphor. The spaces created by the set of constraints were analogous to the lock, within which many possible keys could oper-

ate. This was precisely what I wanted from these diagrams – a presentation of the range of possible outcomes or behaviors that could be accommodated within a set of constraints and that could change or be changed as a consequence of an action.

## Radical constructivism and its assumptions

Von Glasersfeld (1991) identifies four roots of radical constructivism. First is the philosophical root planted by the “skeptics,” that we cannot know the world separate from our experience of it. What we say we know is a consequence of our experience, and we cannot know how our experience relates to that which is experienced. Second is the scientific root planted by the “pragmatists,” that the conduct of scientific research results in what works, not what is true in any absolute sense. That a theory works under certain conditions does not imply that it is true of the world, nor even that it is approaching such truth. Third is the psychological root planted by “cognitive constructionists,” that the mental operations we rely on to act in the world arise by acting in that world, not by developing representations of that world. We literally create the world we experience while living it, relying on processes of adaptation to adjust the mental constructs that regulate (constrain) our actions. Fourth is the biological root planted by the “evolutionists,” that the processes of natural selection and adaptation drive evolutionary change, not a progressively more accurate matching of organism or species attributes with an external environment. These processes are analogous to the processes that drive cognitive development and the construction of knowledge, namely, adaptation and viability, not a progressive matching of thoughts, language and knowledge to an external, ontological reality.

Jean Piaget brought many of these roots together in his studies of cognitive development in children. Neither he, nor anyone since, has been able to explain the cognitive construction of “reality” in a child by inferring a progressive matching of language and concepts with an objective, external, independent reality. To the contrary, all observations of the development of language in children point to language acquisition as independent

of “meaning” or “understanding” of others; its initial function is simply to coordinate actions with other humans in a way that is viable. What we observe as learning in the child is adaptation through assimilation and accommodation. Again, von Glasersfeld identifies the feature of radical constructivism that makes it radical in this way:

“...one must grasp the idea that adaptation is not an activity, but the result of the elimination of the non-adapted, the non-functioning, and that consequently, anything that manages to survive is ‘adapted’ to the environment in which it happens to find itself living. Once this is understood, one realizes that what matters is not to *match* the world, but to *fit* into it in spite of whatever obstacles or traps it might present. Applied to cognition, this means that ‘to know’ is not to possess ‘true representations’ of reality, but rather to *possess ways and means of acting and thinking that allow one to attain the goals one happens to have chosen.*” (Glaserfeld 1991, p. 16)

This begs some questions: What goals? From where do these desires come? Is there a distinction of significance between desires consciously chosen and those unself-consciously acted on? Where is choice in the constructivist’s framework? These questions are analogous to the ones I asked with respect to policy formulation. How can I think and talk about the desires and values that are both implicit and explicit in policy alternatives in a way that accommodates the changing desires and values of the members of the organization or society to which those policies are to be applied? In short, what is the role of policy and the policy formulation process in a desirable society? Where do the unself-conscious processes of culture cross paths with the conscious processes of social design and activism?

Von Glasersfeld has a response in the form of assumptions of a radical constructivist model of cognition:

“It therefore seems legitimate to try and conceive a model that may show how what we call knowledge can be ‘constructed’ without reference to anything outside experiential confines. The notion of model, however, inevitably contains assumptions that lie outside the domain the model may explain. In the case of constructivism it is the assumption of a consciousness that is able to remember, to

reflect upon experience, and to develop likes and dislikes. It is the least a model of cognition must assume.” (Glaserfeld 2005, p. 11)

## Language and conversation theory

“If the constructivist movement has done anything at all, it has dismantled the image of language as a means of *transferring* thoughts, meanings, knowledge, or ‘information’ from one speaker to another. The interpretation of a piece of language is always in terms of concepts and conceptual structures which the interpreter has formed out of elements from his or her own subjective field of experience. Of course, these concepts and conceptual structures had to be modified and adapted throughout the interactions with other speakers of the language. But adaptation merely eliminates those discrepancies that create difficulties in actual interactive situations – adaptation ceases when there seems to be a *fit*. And fit in any situation is no indication of *match*. To find a fit simply means not to notice any discrepancies.” (Glaserfeld 1991, p. 23)

Central to radical constructivism is the role of language. In radical constructivism, the meanings of words, phrases, sentences, etc., and the uses of language, are constructed by individuals through experiences that we call interaction with others. Adaptation of our language occurs as we experience failures and successes in meeting our needs and desires with respect to coordinating our actions with those of other humans. In this sense, the phenomenon of language is like other phenomena we experience and build into our system of knowledge, with one major difference: unlike other phenomena, language is our only access to these other phenomena, as well as to the concept of language itself. The recursive property of language, language about language, opens up the possibility for a second-order coordination of the coordination of action – i.e., the phenomenon of languaging (Maturana 2006). For this recursion to be useful, the language on language must shift from a language of elements and relations to a language of dynamics – hence, *languaging*. Otherwise, it simply creates logical paradoxes

that frustrate and confuse us, if we pay any attention to them. This is not a trivial shift, but one I claim currently necessary to get to the concept of society and its transformation and design. Language, as we know it, has the property of rigidifying concepts, of removing the dynamics (von Foerster 1976). Forcing dynamics into language is the job of the poet and requires awareness, reflection and vigilance.

With a concept of dynamic recursion in language, and the language of dynamics to go with it, further recursions become possible (Maturana 1988). Languaging on languaging becomes awareness (or observing). Observing on observing (observing ‘observing’) creates the concept of the observer. Observing oneself as an observer observing becomes self-consciousness. It is important to distinguish self-reflection from self-consciousness. Self-reflection is seeing oneself as an *other*; there is a distance between the self projected and the description reflected. In self-consciousness, there is no distance; projecting and describing happen simultaneously – in the moment, so to speak. The assumptions of a radical constructivist model as presented above, namely a “consciousness that is able to remember, to reflect upon experience, and to develop likes and dislikes,” require both self-consciousness and self-reflection. It is in self-consciousness that desires emerge as likes and dislikes, and that the phenomenon of choice is experienced. Self-consciousness arises as a consequence of recursions in language; self-reflection is an action taken to evaluate one’s desires as though they were the desires of others. With the experience of choice as alternative paths for action, coupled with a self-reflection on desires with respect to the consequences of our actions, we have a concept of social responsibility, and with it a concept of society emerges. Without a concept of social responsibility, I would not need a concept of society – the set of processes out of which desires and desirability arise.

Another branch of this tree of dynamics worth mentioning is the conversation theory of Gordon Pask (1976, 1987). Conversation in this formulation is manifest among participants as a particular dynamics of interaction in language that begins with some form of asynchronicity, moving toward synchronicity. This dynamics is sustained by the participants through a preference for *recurrent* inter-

action and will continue until the participants achieve an adequate synchronicity (e.g., agreement or agreement to disagree) or they get tired or bored and choose not to participate further. The intensity of this dynamics is unique to conversation, and provides an avenue for thinking about the processes of society – namely, a network of conversations. Participants in a society can hold conversation with themselves (i.e., among one's roles, perspectives, points of view), with other participants, or with the abstraction we call society. It is the latter category of conversation that connects policy and social design, and participation therein, to radical constructivism. Society is a construct, one I need in order to think and talk about values and desires. Then the process of policy formulation can be constructed as a conversation between a participant and society, and the actions of the policymaker constrain the processes of society.

The added importance of language when it becomes dynamic is that we can no longer say we live in the world; we live in language. Everything we know and do, we know and do in language. It is not sufficient to say that we cannot know the external world, or even whether there is one; the concept of an external, independent reality as an ontological curiosity is irrelevant except to the extent that we create the concept of such a reality in language as a way, one way, to coordinate our actions with others. My language tells me to act as though there is a reality. The danger of this language is in the objectification of the idea of an external reality, with the consequence of forgetting that this is a construct and not to be trusted. While I continue to use and rely on this language, I try to keep always in mind that there are as many realities as there are potential people, and these realities can change from one moment to another.

## Dialogic process and dialectical reasoning

The Paskian dialogic provides a way to envision participation in social transformation and design from a dynamic point of view, as opposed to a causal point of view (Richards 1987, 1997, 2001; Richards & Young 1996). Every conversation is an opportunity to participate. The dynamics, once experienced, cannot be reversed. Events, rhythms, pertur-

bations, etc., are set in motion and ripple through the network of conversations I am calling society. Social design becomes a dialogic process and participation social activism. Participation cannot be measured by whether or not the participant “caused” a particular change, only by whether or not the participant experienced being in a conversation. That change occurs as a consequence is given by the formulation, even if the participant does not directly experience it. Change cannot *not* happen.

If I accept that I participate in social transformation and design whenever I am engaged in a conversation, how can I think about particular interactions in the conversation such that the consequences are socially desirable? If I think about society as a set of processes – i.e., patterns of dynamic relations, I can think about those patterns that I want to avoid or prevent. I can then think about the dynamics that will be triggered by particular interactions in terms of the set of constraints on the processes or patterns. This constitutes the “work” of the activist – avoiding or preventing the undesirable while change is happening all around. It is the set of constraints on the processes (what I call knowledge, in a broad sense) that provides the stability needed to be able to distinguish the society as a society in the first place. These constraints are carried in our language and get tested in every conversation. Social transformation does not only happen to a society; it also happens in a society, in the network of conversations. This does not imply that social transformation has to be a mere “tweaking” of the society. If society is accepted as a dynamic concept, as opposed to a static one (e.g., a set of institutions and the transactions among them), and this dynamic concept is accepted as desirable, then each interaction in a conversation has the potential to trigger major shifts in thinking and action. Out of conversations come new ideas and alternatives. Choice and freedom are manifest in conversation.

How do I think about the “desirable”? As a starting point, I have no alternative but to accept that my desires may be different than those of others. A desirable society could be one in which all the participants can pursue their desires unobstructed by the pursuits of others. This does not fit my experience, even when I specify my desires as constraints – i.e., that which I do not want to happen. Conflicts

in the pursuit of desires are so prevalent in my experience that I assume this is the experience of others as well. A way out of this dilemma might be to think of the dialogic process of social transformation and design as one that continually pursues the desirable. That is, participation in a process of social transformation and design, through conversation, that continually seeks the desirable is a first condition of a desirable society. Social process becomes a process of “designing,” the design principles for which include (1) an acceptance that any action or interaction will not dilute the participation of another, and will preferably enhance it, and (2) an acceptance that, in conversation, everything can change. When conflicts arise, desires are explored in conversation for new alternatives, new ways of thinking *and* new desires. Conflicts between pursuits of desires become desirable as stimuli for conversation.

While the idea of constraint, and therefore of negative reasoning, continues to be useful in this formulation of social transformation and design through dialogic process, the shift in thinking from causality to dynamics points toward another perspective on reasoning. If conflicts in the pursuit of desires are taken as desirable, as an opportunity for creativity, interactions in conversations can be conceptualized in terms of dimensions of conflict. I identify two such dimensions, the compatible/incompatible dimension and the supportive/oppositional dimension (Brün 2003, #288). *Dialectical reasoning* is realized in conversation when an idea or alternative is presented along with its opposing and/or incompatible ideas or alternatives. The dialogic process then seeks new ideas and alternatives, along with *their* opposing and/or incompatible ideas and alternatives, and so on. When compatible and supportive ideas and alternatives arise that do not violate the principles of the design process, they can become, temporarily at least, a part of the design. Of course, once a part of the design, they will no longer be useful as stimuli for conversation until their presence creates a conflict again. They will, however, constrain the dynamics in the network of conversations as these constraints have been deemed temporarily desirable.

In order to make the connection to social transformation and design, I have strayed

from the original discussion of radical constructivism. If I now trace the stream of thought backwards, the point of departure occurs when language is transformed into a dynamic phenomenon. Building on the assumptions of a radical constructivist model that von Glasersfeld so carefully specified, the dynamic view of language led to an extension of a stream of thought into a particular concept of society and participation therein.

Of course, for those who might adhere to an elitist view of society (that is, there are those of us who will dominate and those of us who will be dominated, and the human misery that follows is simply “the way things are”), this stream of thought is not only unacceptable; it is heretical. It is here that radical constructivism can play an important practical role. The argument of radical constructivism is so clear that exposure to it can leave no doubt that “the way things are” is a fabrication, leaving no safety net for its believers. The elitist point of view is an intolerant one that defends its intolerance by referring to an external, objective reality as the source of absolute truth. If we accept that some have greater access to this external reality by virtue of their wealth, education, religion, nationality, etc., we grant them the power to dominate. This is what radical constructivism cannot tolerate.

## Implications and concluding remarks

The concept of social transformation and design that I present here, with a basis in language, suggests a social activism in everyday life, a way of living. We live in language, and every time we speak or write, or use other languages (visual, mathematical, gestural, musical, etc.), we alter our society. We carry the constraints on the patterns of dynamics that constitute the processes of society in our language, and those constraints shift as a consequence of interacting in that language – a never ending cycle, yet perhaps desirable. The concept of a fixed, objectified end state as the product of social design is not desirable because we do not agree on what that end state should be. If we can agree that we experience conflict in our pursuit of desires, then a process that engages us in the generation of new ideas, new knowledge, new val-

ues and desires would be a desirable “product” of social design – a design for *designing*.

Ernst von Glasersfeld’s work and thought provides a rich source of ideas for initiating discussion and research on society and its transformation and design, and other human endeavors, much of which has yet to be mined. It raises new questions and stimulates new thinking. Radical constructivism can also serve as an anchor for applied research on social activism and its variations. I hope I haven’t distorted the ideas to an unacceptable level by extending them into the domain of dynamics. If I have, it is certainly not out of any disrespect or lack of appreciation and admiration for Ernst. To the contrary, much of my thinking would not have happened without, at least, my version of Ernst’s framework for radical constructivism.

I have not yet addressed one of the assumptions of a radical constructivist model – the ability to remember. I claim that, despite all the studies and literature on the subject of memory, the concept of remembering is still relatively undeveloped. It is central to our notions of time and history, and we experience what we call remembering continually while we are awake and often while we are asleep. “Memory” has become objectified in our language, and we accept it as given, either as a container for our thoughts over time or as a mechanism for explaining habitual relationships we no longer need to think about. A consequence of this objectification is that we then think about learning and adaptation as phenomena that take “time” – we experience a perturbation, a deviation from the norm, we think about it, and then we attempt an adjustment or correction. When we take the language of remembering into the domain of dynamics, time itself becomes dynamic and malleable, and concepts like instantaneous remembering become useful:

“The Art of Instantaneous Remembering: Try and project an event you care for, while it happens to you, into an imagined past, so that you can experience the event simultaneously ‘now’ and ‘once upon a time’” (Brün 2003, #118)

This is a skill of the performer, and therefore of the activist as a performer. Skilled performers experience their surroundings, in the moment, and make instantaneous adjustments, without time delay. The type of thinking that goes into making these adjustments is

not one of means-ends rationality; it has to be a different way of thinking that does not require connecting causes to effects. It may involve imaging the patterns of dynamics and their potential constraints such that any adjustment within the constraints is acceptable – an immersion in the dynamics of the surroundings. Whatever this way (or ways) of thinking is, it requires the performer to be fully aware and self-conscious, without thinking through every movement or utterance or analyzing alternatives before making adjustments. For the social activist, performance serves to stimulate conversation by generating perturbations and provocations that serve as asynchronicities. I leave further development of the concept of remembering for future constructivist and dialectical exploration.

By way of a conclusion, I offer this quote from Ernst von Glasersfeld:

“...I believe I have come to adopt a cybernetic way of thinking... I became aware of this in the many conversations with students who were worrying about their future and asked for advice. I heard myself telling them that it was far more important to know what one did *not* want to do, than to have detailed plans of what one did want to do. One day it dawned on me that this

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was plain cybernetic advice: *It is more useful to specify constraints rather than goals.* – And then I explained it by adding that in one's teens or twenties one usually has already discovered a number of things that one cannot stand, whereas it is quite

impossible to foresee what, ten or twenty years later, will provide the satisfactions needed to maintain one's equilibrium." (Glaserfeld 1992, p. 25)

The connection between radical constructivism and the constraint-theoretic approach

to policy formulation seems clear. The extension of radical constructivism into concepts of social transformation and design by treating language as a dynamic phenomenon is perhaps more fuzzy. I leave the fuzziness as a provocation, a stimulus for conversation.

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