

**Constructing a Social Science for Postwar America:
The Cybernetics Group, 1946-1953; Steve Heims
Book Review by Carlos A. Martínez-Vela**

Steve Heims presents to us a historical account of the series of conferences, supported by the Macy foundation and held between 1946 and 1953, that dealt with what would eventually be called *cybernetics*. He approached the topic as an outsider—as a physicist—with an interest awakened during the Vietnam War era, to "gain a broader perspective on the practice of the sciences and the direction they had taken into the postwar world."(viii) In the process, Heims sets out to "acknowledge fully that science is a human activity, not only a body of knowledge" (ibid). To pursue his task, he started by analyzing the proceedings of the conferences. Years later, as he continued his project, he took a historical, interpretive approach to describe and understand the meanings of documents and conversations. Through historical analysis of direct and secondary sources, as well as interviews with conference participants, we are presented with an account of the conversations and processes that the "tribe" or the "cluster" of cyberneticians held, created, and promoted during the Macy conferences.

Heims book has a set of important underlying themes that go beyond a descriptive account of the Macy conferences. It is in these underlying themes where I believe the value of the book resides. So instead of presenting a linear account of Heims book, I shall pursue the key themes present throughout the book, drawing from the various chapters. Heims emphasizes the roles and ideas played by psychologists and social scientists, so I will focus on the impact of these ideas on the social sciences, not only on the ideas themselves.

The centrality of feedback and circular causality

Perhaps no other unifying concept is more present throughout the book than the idea of feedback and circular causality. All the participants in the conferences applied these notions to their own theories. They were used to explain, for example the phenomena of the mind (such as learning and perception) and the interaction between society and the individual (the "psychocultural approach"). "Feedback has come to mean information about the outcome of any process or activity. No single word for that general idea seems to have existed in the English language before feedback was introduced in the context of cybernetics." (p. 271).

As we shall see, the transfer of the idea of feedback and circular causality from the natural to the social sciences was fostered by the circumstances of the time. The rise of control theory was a source of concepts that would prove useful at a time when what was deemed important was social stability and equilibrium. Feedback mechanisms were used to describe the process of social adaptation, of economic activity (the idea of "information"), of organizational performance, of learning and education. Frank thought that the connection between individual personality and culture is circular, and that the tensions in both individuals and social systems cause each other to seek and equilibrium, a harmony. The psychocultural approach established that culture is a human creation,

man's attempt to order and pattern his personal life and to provide for orderly group or social living. Bateson used the concept to explain communicative interactions between people. Lewin applied the idea as he tried to connect individual lives with the larger social context. Generally speaking, the behaviorist approach is based on a stimuli-response view of the individual. This view was extended, as said above, within the functionalist view of social systems to emphasize how individuals, groups, organizations, and society in general adapts to changing environmental conditions to maintain adaptation, stability, and equilibrium.

The social construction of knowledge

In the preface, Heims set as one of his task to acknowledge that science is a human endeavor. And in this, he succeeds in presenting us with an account of how human science is, and how various social actors play key roles in the development of ideas.

Let us look at the units of analysis of the book: people and their ideas. First, the book itself is an analysis of a set of conferences, which are, in the end, groups of individuals engaged in conversation about a particular set of topics. It is from these conversations and the collective learning and knowledge construction process, as Heims repeatedly reminds us, where the influence of the cybernetics ideas comes from. Second, Heims presents us with key individuals that played an instrumental role in the development and promotion of these ideas. Weiner is the master source and integrator, and author of the influential book that would be key in the spread of the cybernetics ideas. He was also the one who foresaw a key integrating concept around which a group of individuals rallied: communication. Bateson, moving across disciplines and later publishing an influential book, would contribute greatly to the spread of these ideas in the social sciences, as did Margaret Mead, the "talk chief", advocate, active promoter and spokesperson for the ideas of the group.

All of the conference participants existed in a social world of particular social, cultural, political, and economic characteristics. Heims emphasizes politics. His discussion is intertwined with descriptions about the context of the conferences, emphasizing the political and ideological climate of postwar America and how it provided a fertile soil to grow and multiply the seed-ideas that emerged from the cybernetics meetings. It became a fertile ground by rooting out competing ideas and fertilizing those that matched the dominant political paradigm of the times, that is, conservatism. In Chapter 1 he mentions that there was a hostility to social innovation, that radical critiques and questionings of the status quo were muted, and shows how the social sciences were influenced and at the same time, became a tool of the political establishment. Although, as Heims mentions, the cyberneticians thought of their ideas as scientific and apolitical, their view reflects, from the academic perspective, the political response to communism that was then underway in the United States. Talcott Parsons would become the epitome of this phenomenon, by developing a theory of society that emphasized the existence and maintenance of order, stability, and equilibrium, and that talked about the existence of a *social system* that exists independently of human will.

Heims account is a superb example that challenges the views that claim that positive, realist, and nomothetic approaches to social science are apolitical and value free. They are, as Heims account shows, a result of political struggle, and they reflect the values held by the participants in the conversations, even if today such ideas are taken for granted.

Besides individuals, groups, and political intervention in the construction of knowledge, we also see throughout the book the roles that other actors played. The name given to the conferences, the "Macy" conferences, comes from the foundation that sponsored them. Without these funds, the advancement of ideas described in the context of the book would not have happened. Larry Frank, another individual played a key role acting as intermediary between the foundation and the group. In a similar way, we are told how government funding, and the participation of the same researchers in government projects during the war influenced the shape of the ideas that resulted. And finally, a key interaction of actors took place: between natural scientists and social scientists. I will not discuss the relevance of this particular event.

The naturalization of the social sciences

A movement emerged during the 19th Century to make the social sciences more "scientific." But what exactly does it mean to make the social sciences more scientific? Figures like August Comte, one of the fathers of sociology, were advocates of a scientific study of society that would establish law-like regularities by scientific means and create timeless, universal knowledge about society (Mazlish, 1998). Social scientists were then, at least in part, motivated by the great achievements of the natural sciences in explaining the natural world. They sought to transfer ideas and methods from the natural to the social sciences. This movement would take several directions, but Comte is identified with one particular approach, that of positive social science. Today such an approach to the social sciences would be characterized by an *objectivist* view of reality, a *positive* view of knowledge, a *deterministic* understanding of human nature, and a *nomothetic* methodological approach to social science. Society is seen as an organism, as an aggregate of parts, in order, and seeking to maintain equilibrium (Burrell and Morgan, 1977).

Heims presents to us an excellent microcosm example of how the natural sciences have influenced the development of the social sciences. One of his explanations of the aims of some of the cyberneticians reminds us of Comte's aspirations for the scientific study of society. After World War II scientists and engineers emerged triumphant. Their success in helping the United States win the war and made them national heroes. Social scientists, who were also involved in the war and collaborated with natural scientists, suffered from some kind of "natural science envy", and were eager to turn to the natural sciences, once again, for inspiration to make their endeavor more "scientific." The book contains numerous examples of how the cybernetics conferences provided a suitable environment for the transfer of ideas and concepts from the natural sciences into the social sciences. There was a push from natural scientists who sought to extend the applicability of their concepts to the social world, and a pull from social scientists who

sought new concepts and more legitimacy for their endeavor. Social scientists were also consciously or unconsciously seeking seemingly apolitical ideas, and they were found in the scientific endeavor of some of the cyberneticians. These forces, combined, reinforced this transfer.

The naturalization of the social sciences is also expressed by the rise and consolidation of quantitative social science. This was expressed in the rise of modeling society and the use of statistics to explain and understand social phenomena. "The effort was always to give mathematical form, to simulate by a machine, or in other ways to resemble engineering when speaking of anything human, even the most personal feeling" (p. 179). Two important examples are discussed by Heims. First, the work of James Savage, who sought to apply mathematical modeling to decision making and acting in the face of uncertainty (Chapter 5). And second, Paul Lazarsfeld, who became a key figure in the application of statistics to social phenomena (Chapter 8).

The bio-mechanization of the social sciences

By bio-mechanization I refer to two central ideas that float around Heims' book. First, the aim of natural scientists and some social scientists to root phenomena of the mind in biology. And second, the use of mechanical metaphors to describe the mind, the individual, and society at large. Chapter 2 reminds us that the idea of the conferences, in essence, was to "identify in a behaviorist spirit some of those aspects of what organisms do that can be analyzed in terms of what certain analogous machines do."

Regarding the biological foundations of consciousness and the social world, the book emphasizes the efforts of psychologists and psychiatrists to look for explanations of, for example, mental disorders, in the structure or the biochemical processes of the brain. A central example in the book is the McCulloch-Pitts idea of the transmission of impulses throughout the brain, and the conceptualization of the mind a network of interconnected elements and an information-processing system. We might say that the discovery of electrical pulses in the mind led to a further blending of the ideas of seeing the mind as a machine that processes information -a computer-, the biological foundations of consciousness, and consciousness itself. Brain, consciousness, and machine blended in a set of ideas that provided the meeting point of the multidisciplinary group that participated in the conferences.

The use of organic or mechanical metaphors to describe human phenomena extended to society itself. Here, Talcott Parsons is again the main representative of this movement. His work on *the social system* is one of the foundations of what is called the functionalist paradigm in sociology. When social systems are analyzed along functionalist lines, emphasis is placed on (1) general interrelatedness or interdependence of the system's parts, (2) the existence of a normal state of affairs comparable with the healthy state of an organism, (3) the way all the parts of the system reorganize to bring things back to normal. (Wallace and Wolf, 2000). From a functionalist perspective society is a system of interrelated parts and change in one part will lead to a general reorganization that

brings equilibrium back. One would expect that a functionalist view of social actors would view them as subsystems of the larger social system and that changes in other subsystems –the environment– would lead the organization to change –adapt– in order to maintain both its internal equilibrium and that of the broader social system. Failure to adapt would lead the actor to lose its purpose within the social system and its ability to survive. All these ideas are consistent with the concepts of cybernetics.

Several circumstances of the time, according to the book, provided, again, an ideal environment for the flourishing of functionalist ideas, the use of mechanical and organic metaphors, and the use of biological explanations for social phenomena. From Heims' research we might say that, once again, the success of science and engineering during World War II and the perception that technical solutions were good, and furthermore, were apolitical, motivated social scientists to look for this kind of explanations and legitimated the extension of natural-scientific explanations to the social world (see, for example, p. 178). The emergence of technologies that embodied the concepts and ideas being proposed in the cybernetics meetings brought these concepts to the popular discourse and consciousness. Technical explanations of human phenomena were also in tune with the political environment of the country. As Burrell and Morgan describe, the functionalist paradigm is characterized by a concern for providing explanations of *the status quo, social order, consensus, social integration, solidarity, need satisfaction and actuality*. At a time when social innovation was discouraged, these ideas also provided a realist explanation of society, focused on what *is* and not on what was or what could be, largely independent of human will, where individuals needed to adapt to the state of affairs, discouraging any kind of social action oriented towards change.

Biological explanations of mental processes, and the idea that we belong to a social system, reinforced a deterministic view of human beings and society. If consciousness is rooted in the biological characteristics of individuals, which are inherent by birth –by nature, not by nurture–, and if we fulfill a function in a grand social system, there is one best way to be and one plausible explanation of human behavior. Again, though claiming that this kind of explanation is value free, it is not. There are normative implications, because anything defined as deviant from the "nature" of human beings, or that counters the equilibrium of the social system, is problematic and ought to be corrected. At a time of technical solutions, correction was sought through technical means. The distinction between the human and the technical was diffused. Heims repeatedly, particularly at the end of each chapter, expresses a quiet concern about these developments and their implications for what it means to be human.

The individualization of the social

Several of the developments described by Heims in his book point to another development in the social sciences in the United States: the centrality of the individual. From this perspective, the social emanates from the individual, and society is nothing more than an aggregate of individuals.

Perhaps the major example of the individualization of the social sciences in the book is the rise of the mental health movement. "Atomism in the social sciences manifested itself in the tendency to reduce social and political issues to individual psychology, usually to Freudian psychoanalysis of the individual." (p. 9) In addition, the psychological explanations relied heavily on behaviorism and would later evolve into cognitive science. All these ideas were related to what I have described in the previous sections, in particular, to the view of the mind, and of the human being, as a machine. Thinking of the brain, the residence of the self, as a machine or a system would lead us to think that we can change the self by pulling some levers in the machine. And, if society is viewed as the aggregate of individuals, the social world can be altered, or maintained, by altering or maintaining states of mind.

Throughout the book Heims presents evidence of this swing towards individual psychology in various contexts. Larry Frank, for example, "envisioned a social movement which starting at home [where the individual is nurtured] would radiate outward and eventually transform all social institutions." (p. 62). Molding individual personalities held the key to the transformation of social institutions. Molding, here, meant creating a "favorable" environment during childhood, and for some, the use of technical solutions to foster social adaptation. "Psychiatrists and social scientists, in the optimistic postwar mood, forgetting how little they knew but fortified by the notion of circular causality and the atomistic view of society, organized worldwide as a group of experts to make global mental health into a new technocratic ideology" (p. 163).

The move towards individual psychology was also in tune with the political environment of the times. Chapter 7, on Worldwide Mental Health, provides several examples. Rappaleye, the Macy Foundation president in 1955 "was among those whose reaction to political instabilities, wars, and economic conflicts among social groups was to psychologize." (p.169). The emergence of drugs (like LSD) and of new psychological approaches were seen as a problem, but also as an opportunity to alter the behavior of the enemy or access his or her states of mind. Mental health also provided a politically acceptable alternative to Marxism. The World Federation for Mental Health was founded in 1948, at a time when "to some who feared communist world revolution, world mental health seemed a welcome liberal alternative ideology" compatible with U.S. foreign policy (p. 170, 175-6). The proceedings of the opening sessions of the WFMH starts with a UNESCO statement: "Since wars begin in the minds of men, it is in the minds of men that the defense of peace must be constructed." (p. 174).

The promise and peril of interdisciplinarity

Heims presents to us evidence of the promises of interdisciplinarity. The ideas that evolved during the cybernetics meetings would have probably not emerged and become popular had the discussion taken place within a single discipline. This is evidence to what many authors have repeatedly said that often the most innovative and exciting development in the sciences –social or natural– occur at the boundaries of the disciplines, whenever individuals with different outlooks enter into conversation.

The book shows evidence of what makes an interdisciplinary effort gather momentum. We see the centrality of an idea or a concept –such as communication or feedback– that may be interpreted from different perspectives and applied to a wide variety of phenomena in different disciplines. We see the centrality of intermediaries, of individuals that function as a bridge between disciplines (Weiner, Bateson), between science and society (Mead), and between science and philanthropy (Frank). We also find that a multidisciplinary effort works best when scientists from various disciplines gather around a specific problem that can best be understood from different perspectives. In this case, the phenomena of the mind, which clearly intersects the natural and the social, provided a fertile ground for such work. Finally, we see the contributions of marginal individuals, who never fully belonged to any academic community, but who were motivated by understanding particular problems and functioned as vehicles that transferred ideas from one discipline to another.

The evidence in the book also shows the price of being interdisciplinary. Interdisciplinary, though often pays high rewards, also has a high price. Within academia, it is a subversive strategy in a world that is structured around disciplines and rewards disciplinary work (Bourdieu, 1975). Individuals who are able to successfully communicate and build a reputation in more than one academic community, often succeed, but not by doing interdisciplinary work. Rather, by talking to each community in their own language. On the other hand, some individuals who engage in interdisciplinary work are often marginalized and never become full participants in the academic system. Bateson and Lewin are two salient examples in the book.

Looking for a Final Solution

Chapter 11 describes the presence of four "synthetic minds" within the cybernetics meetings (Weiner, Bateson, Stroud, and Northrop). They all, in one way or another, sought to apply cybernetic concepts to complete their own grand theories, or to propose a grand theory that would provide solutions to many issues of the time. Because the cybernetics ideas were espoused by both the social and natural science and engineering communities, these ideas were powerful in providing a particular lens to look at multiple phenomena the world around us, and to act upon it in a specific way. Isaiah Berlin, in *The Pursuit of the Ideal*, reminds us that

[T]he notion of a perfect whole, the ultimate solution, in which all good things coexist, seems to me to be not merely unattainable... but conceptually incoherent; I do not know what is meant by a harmony of this kind. Happy are those... who have, by their own methods, arrived at clear and unshakeable convictions about what to do and what to be that brook no possible doubt. I can only say that those who rest on such comfortable beds of dogma are victims of forms of self-induced myopia, blinkers that may make for contentment, but not for understanding of what it is to be human (p. 15).

Skepticism about the validity and desirability of having a grand theory that would help us deal with ourselves and the world is perhaps one of the main lessons to be drawn from *The Cybernetics Group*. We are presented with an account of the multiple factors that affected the rise and spread of cybernetics and its ideas to explain the social world.

Although many of these ideas are still taken for granted as *the* truth, we ought to keep in mind that they are not absolute, and that they arose thanks to the confluence of a set of technical, political, social, and scientific factors at a particular moment in the historical process. Heims shows us the rise of a particular *model* to understand reality. But it is not more than that, a model, a lens that emphasizes some characteristics of the world at the expense of others. Furthermore, it is a model that is not value neutral, that arose in the context of a political struggle, but that has become objectified and taken for granted.

It is our task as intellectuals to distinguish, first within ourselves and then in the theoretical and practical realm of our action the limits of our knowledge, and to recognize and value the diversity of theoretical approaches that are out there. These approaches might be in fundamental opposition due to their philosophical assumptions, and Heims mentions several times the nature of the epistemological conflicts within the group: rooted in values and assumptions about people and the world. There might be more plausible explanations than others. But, why are they plausible? Not necessarily due to a hard fact. Perhaps they are plausible because we have made them plausible by generalizing their application to the social world. As aspiring professionals in the field of engineering systems, which by definition deals with humans and technique, we need to be aware of the limitations of our own approaches and avoid approaching problems, particularly in the social world, in a dogmatic way, as if ours was the single best approach to understanding.

Sources

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