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Lenin's Void: Towards a Kenogrammar of Management

Zusammenfassung: Es gibt keine allgemein akzeptierte Soziologie des Managements. Der kognitive Fokus der Soziologie tut sich schwer mit den volitiven Aspekten des Managements. Der Aufsatz stellt einen Versuch vor, Management als einen evolutionären Mechanismus zu verstehen, der kognitive und volitive Aspekte miteinander integriert. Der Aufsatz führt die allgemeine Idee einer Kenogrammatik ein, mit deren Hilfe die Leere beschrieben werden kann, die von einem Management bearbeitet wird, das einen Zweck einführt. Es wird ein Modell vorgestellt, das das Management der russischen Revolution durch Lenin als eine »strategy of access« (Philip Selznick) beschreibt. Der Bolschewismus verwandelt Parteimitglieder in Parteiagenten, die sich darum bemühen, Stellen in verschiedenen relevanten Organisationen zu besetzen und in ihrem Vorgehen sowohl von einer passenden »Theorie« als auch von einer den Alltag der Revolution definierenden »Praxis« unterstützt werden.

I. Introduction

There is no self-evident sociology of management. The cognitive focus of sociology seems to be at odds with the volitive aspects of management. The paper proposes to consider a possible approach, which consists in viewing management as the evolutionary mechanism of a social system, thus integrating volition with cognition. Evolution does not necessarily change the system. It may as well maintain it with respect to a changing environment. That is, the system changes anyhow. The paper looks into some possible notions informing such a view (II, III, IV), models it with respect to the case of the management of the Russian revolution in 1917 (V), and offers a conclusion (VI). The paper is the sketch of a possible »kenogrammar« of management, not its elaboration. It proposes to consider emptiness, or void, as the necessary correlate of management action. Any purpose, considered by management action, consists in seeing nothing where something will be, be it a profit, a technological innovation, a network, or, indeed, a revolution. We speak of a kenogrammar (Günther/von Foerster 1973) in order to emphasize that there is no emptiness, or void, which is not surrounded, or accompanied, by determinateness.

II. Structure and Performance, System and Purpose

There is a certain tension between sociological thinking and management thinking. Whereas sociological thinking tends to think in terms of structure (Parsons 1937; White 1992), management thinking tends to think in terms of performance (Gutenberg 1951; Drucker 1973). Yet it should be possible to reconcile these two traditions since the reference of a structure is the solution of the problem how to link yet unspecified elements or events, whereas the reference of a performance is the measure of that very solution.

That is not to say that sociology is without any measure. Indeed there are plenty of ways how to measure a correlation of elements or events. Yet management not just measures, but measures with respect to a responsibility which is the responsibility towards an organization or, vicariously, towards a career. Again, sociology has its perspective on responsibility, too. Indeed, its measures tend to be taken with respect to the overall behavior of a group or society. Yet management, if anything, tends to be more restrictive in its allowances for a gap between the measures, on one hand, and the phenomena measured, on the other. Structures, that is, tend to be invented as the observer sees fit. Performances are linked back to the phenomena, which carry them on, or don't.

There are two questions we may ask. One is, whether management is a possible object of sociological thinking, taking into account that it rarely is. The other one is, whether sociology, learning from its object, could become more restrictive in measuring the structures of the social.

Systems may be a possible perspective of how to analyze the structure of management while reintroducing structure into sociology. The terms to frame structure and performance, then, are system and purpose: Any structure is interpreted as the structure of a system, taking part, or not, in the production and reproduction of the system. The advantage of a systems reframing of the notion of structure is that structures tend to be interchangeable, even if every one of them is necessary, with respect to the autopoiesis of a system (Maturana/Varela 1980). As to performance, the systems perspective introduces the notion of purpose (Rosenblueth/Wiener/Bigelow 1943). Purpose both measures and directs performance. Indeed, it directs it by measuring it.

We may then say that purpose is the structure of performance if that performance is able to direct and measure itself at all.

That notion includes the possibility that the performance is the purpose of the performance.

Management, then, is performance only insofar as it controls, that is directs and measures itself in terms of the purpose of the performance (Vickers 1967). Sociology of management would have to look into the systems reference of such a performance and into the sources of possible purpose.

There is a drawback to such a procedure. If we link purpose back to system we have to accept the notion that »system« means black box. Even if we succeed in giving a model of system, it will be the model of our relationship with that system. We should be aware of the fact that the better we understand the model the less we understand the system and ourselves, the observer of the system (Glanville 1982).

That is why cybernetics proposes to talk of control, not of understanding. Cybernetics proposes to restrict analysis to »operational research« (Ashby 1958), which consists

- in looking at what happens, not at why it happens,
- in collecting only the information necessary for the job at hand,
- and in trying to solve only the problems of today since the system will change anyway.

The advantage is that we get an awareness of what cybernetics is doing. Sociology may be understood as the epistemology of cybernetics with respect to the management of a system. Sociology watches cybernetics controlling the indeterminateness of a system (Luhmann 1996, 51-52; Luhmann 1997). It becomes a measure of management's performance with respect to the structures of the social.

III. Evolution

Purpose, to be sure, is not to be seen in terms of causality. There is no assumption here that the purpose is the cause of the effects to be produced. Aristotelian teleology is replaced by cybernetic teleology talking of feedback instead of cause and effect. The teleology assumed consists in a logic linking back the observed behavior to systems states (»teloi«) either to be realized or to be avoided (Rosenblueth/Wiener/Bigelow 1943). The control of deviations by either positive or negative feedback creates the »morphogenesis« of the system (Maruyama 1963). Positive feedback, or amplification of deviations, maintains the system by changing it; negative feedback, or correction of deviations, changes the system by maintaining it.

In order not to fall back on a causal perspective, even when not denying that there are a lot of causes and effects traveling back and forth between systems and their environments, we introduce an evolutionary perspective. Evolution here means that we restrict ourselves to the observation of variations, selections, and retention and assume a systemic perspective linking these three »mechanisms« to each other (Campbell 1969). It should be noted, however, that post-neo-darwinistic evolution theory avoids talking of systems since there is no self-evident way to link these three mechanisms to each other

(Kauffman 1993). Instead it talks of »complexity«, yet assumes a sharp distinction between »natural selection«, on one hand, and »self-organization« on the other, only to assume that this very distinction is the precondition for a system to be able to evolve, and for an observer to be able to watch it.

In drawing on evolution theory we solve the problem of keeping our distance towards causality, yet have to accept in exchange a certain blurring of the notion of system by accepting complexity. We compensate for such a blurring of the primary distinction of systems theory by taking up the notion of »form«, as proposed by G. Spencer Brown (1969). Any determinacy, or mark, here depends on the operation of a distinction creating as its »other side« an unmarked state and (re-)producing the indeterminateness of the initial condition at the very moment of an observation of the form of the distinction consisting of its two sides taken together.

Note that the initial condition is already the result of an observation that reintroduces complexity where a distinction has already been drawn. We will see, as this is indeed our perspective on management, that seeing a void triggers a reintroduction that favors yet another distinction instead of being paralyzed by complexity.

Note that we are accepting a certain complexity in terms of terms in order not to be overwhelmed by complexity in terms of facts. We are following G. Spencer Brown's recipe to abandon existence to truth, truth to indication, indication to form, and form to void (Spencer Brown 1969, 101).

We are as cautious as possible. We assume management not to be restricted to just one evolutionary mechanism. It may play out its regime on the levels of all three evolutionary mechanisms. Management may thus present an organization

- with ever new variations to look at itself and its environment,
- with selections of useful versus useless variations,
- and with retentions of selected variations with respect to possibilities of stabilizing the system.

Management thus may play the role of evolution disguised as planning. This may be the only way to introduce »requisite variety« (Ashby 1958) into a system operating as distinct from evolutionary, even turbulent environments (Emery/Trist 1965). Yet, this assumes a certain all-pervasiveness of management that, while corresponding to a certain self-image of management, emphasizes as well the inner conflicts of management. Management has either to contradict itself, playing out selection against variation, and vice versa, or to short-circuit evolution by feeding retention back into variation. Luhmann (1997, 494) is assuming such a short-circuit on the level of the overall society, thereby reintroducing the distinction between »natural selection« and »self-organization« into the system.

IV. Volition

We have systems, purpose, and evolution to frame performance and structure. Purpose translates performance into structure, thus linking evolution back to systems if we allow for failing purpose and non-purposeful behavior as well.

Let *systems* be defined as the operation solving the problem of the reproduction of a system. That means, we introduce the notion of system in order to introduce unpredictability and unreliability with respect to systems operations being the still uncertain remedy to both (von Foerster 1987; Luhmann 1996; Baecker 2002a). Note that unpredictability and unreliability are introduced by the systems being recursive entities, that is by the systems being systems, operating on their own operands.

Let *evolution* be defined as the elaboration of the knowledge that we don't know what happens yet watch correlation that somehow is more than chance. We assume variation, selection, and retention to cooperate, yet we know the very distinction between variation and selection and between selection and retention to be the blind spots of evolution theory (Luhmann 1997, 426).

We may thus accept performance as a different word for systems operations solving the systems problems, and structure as a different word for the link between the solution and the problem.

Management, then, may be understood as the performance of the form of the purpose, always insisting on the purpose while knowing that the distinction of the purpose is and remains a selective one. This knowledge attaches management to all three mechanisms of evolution, since the selection may be the selection of a variation, the selection of a selection, or the selection of retention. The important feature is that any of these selections gets performed, that is, gets done and may be observed by others. It is the performance that defines operations being selected and next operations being possible.

It seems to follow from these considerations that management, as the performance of a form, is working both marked states and unmarked states, including the distinction between them. The attractiveness of the idea of purpose may not lie in what it describes as the state aimed at but in the states to be avoided in more or less close proximity to that state. Looking at what you want you begin to observe the relevant part of the world, never knowing for sure, to be sure, what exactly is the relevant part, thus keeping an eye on the horizon as well.

It should be evident that any performance receives its own guidance through the ability to link marked states (purposes) and unmarked states (environment) and to insist, as long as it seems to fit, on the very distinction carrying that link.

Yet purpose does not only entertain a link to environment, which we may call the *cognitive* aspect of management. Any purpose assumes as well a link

between a state not yet realized (including states to be maintained) and a different state (or the same state) which is the actual state. We may call the *volitive* aspect of management its ability to envision a future state as different from the actual state and to undertake measures that reduce or enlarge the actual state to the future state.

For sake of simplicity, let *environment* here be a catch-all term denoting material, social, and temporal dimensions. Of course, since »the environment contains no information«, yet »is at it is« (von Foerster 1981, 263), all of these dimensions are »enacted« (Weick 1979) by the system itself. Environment thus is a historical category relating to ecological surprises and technological lock-in as well as to social conflict and coalition or to a traditionalized past and unknown future. It describes the knowledge entertained by a system (or its observer) with respect to the conditions of its reproduction, and the ignorance that knowledge is embedded in and getting glimpses of.

We may model the distinction between the cognitive aspect of management, on one hand, and the volitive aspect of management, on the other, by two different exchange relations. The first one is a relation between states as seen by an observer, the second one a relation between states in the environment as produced by the observer. Gotthard Günther (1979, 215) gives the following figures for the two cases, fig. 1 for cognition and fig. 2 for volition, the smaller box denoting the observer watching (fig. 1) and acting on (fig. 2) his environment:

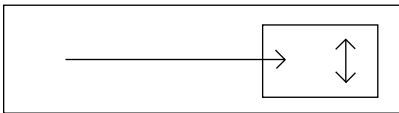


Fig. 1

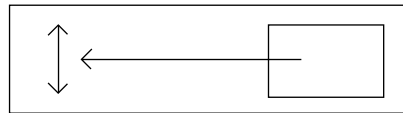


Fig. 2

There is an inverse relationship between the two mechanisms of exchanging states for each other, and a constant interplay between them.

More importantly, however, both cognition and volition work by exchange and thus by a distinction not only between one state and the other, but also between a place and its occupation. Each state may assume a value, which is contingent upon its own exchange relation. As one may exchange one thought for another when trying to figure out which one gives a consistent image of a world, one may as easily envision the exchange of one state of the world for another in order to let it fit one's image of it. The action entailed by that vision might not be undertaken that easily but this only informs the volitive operation of exchange, it does not block it. Changing thoughts or states introduces, even if almost unnoticeable, a moment at which the place occupied just before by a thought or a value, is empty.

Cognition works by emptying and re-marking one's own thinking, as volition works by emptying and re-marking the states of the world. Both operations are done in close neighborhood to different thoughts and different states, such that there is only relative emptiness, that is an emptiness as distinguished from something. Else, there could not be any distinction operating.

Note that there is a certain artificiality in the distinction between cognition and volition. One may assume an observer changing his or her own thinking as somebody volitionally changing his or her cognition, perhaps by doing »theory«. And one may assume the states of the world being exchanged as operations obeying the attempt of the world to better see itself (Spencer Brown 1969, 105), doing a kind of »theory« inherent in all practice.

Anyhow, purpose is just another word for void. When looking at the environment of the present state, one is looking at the unmarked, which is the source of possible disturbance. When looking at the future state of the present state, one is looking at an unmarked state awaiting its mark. Any purposeful management, and there is no other one, either knows about the void surrounding any purpose or introduces it in order to further the purpose. There is no other way to realize what is not yet real.

Purpose, being the marked state of a form consisting of the purpose and its void, is the mechanism to deal in evolution. The purpose is the selection of possible variation and defines, when being changed, a variation of its own. The establishment of the form of the purpose defines retention. One may call it strategy, hierarchy, or game (Crozier / Friedberg 1977).

V. The Model

The Russian revolution is a case in point. Philip Selznick, in his book on »The Organizational Weapon: A Study of Bolshevik Strategy and Tactics« (Selznick 1952), was able to show that the main mechanism of that revolution was Lenin's and others' concept of »dual power«. It worked by changing all kinds of existing parties, institutions, and corporations into the »empty shells« of a power not existing any more, and by replacing at the right moment the empty shell by a parallel structure of power build up in preparation and consisting of loyal Bolshevik Communists.

The vision, or purpose, is simple. Yet its execution is not. That is why Leninism is an apt model of management. We analyze the procedure step by step. And we use, in order to simplify and to visualize the complexity of the procedure, Spencer Brown's (1969) calculus of indications as a means of notation.

It should be understood that we compute the revolution in retrospect. We do not assume that our model is a possible model of how to manage revolutions in general (Hamel 2000). We are interested in the specific case even if the spe-

cific case is a general one on its more abstract level. The more expanded the form, the less general the model. Condense it, and you understand something about management in general. Note, however, that each specific cross is identical to the most general model, thus revealing the fractal nature of the procedure.

All management is performance of a purpose, setting it, looking at inside and outside and maintaining the distinction:

$$= \overline{\text{purpose}}$$

Let such a form denote a marked state, »purpose«, in distinction from an unmarked state, the void. Crossing the distinction from the void to the purpose produces it. That is why there is a void on the left side of the equation as well. We are dealing with the form of compensation (Spencer Brown 1969, 10). The distinction and indication of a purpose compensates for the void existing there if no purpose would be distinguished and indicated.

In order to show that management knows what it is doing, we may write the form:

$$\text{management} = \overline{\overline{\text{purpose}} \mid \text{environment}}$$

This may be understood as the basic »cybernetic« form if cybernetics is understood as a general theory of control and communication (Wiener 1948). Note that the environment is part of the marked state, thus distinguishing it from an unmarked state as the outside of the form of the purpose. We deal with »enacted« environments.

The step leaving the general case and leading into an analysis of Bolshevik revolution as designed by Lenin and others (Lenin 1902) consists in defining the purpose in terms of a specified environment. Lenin defines the conquering of positions in existing organizations such as party journals, parties, organizations of the labor movement, governments, armies, and corporations as the purpose of the strategy leading to the revolution and of the revolution itself. The management advantage of such a definition is that it applies to the purpose as well as to the environment. We now have distinctions »re-entered« (Spencer Brown 1969, 56) into the form of the distinction:

$$\text{management}^{\text{Bol.}} = \overline{\overline{\overline{\text{positions}} \mid \text{organizations}} \mid \overline{\text{positions}} \mid \text{organizations}}$$

The management of the Bolshevik revolution consists in doubling all existing organizations and the positions offered by them depending on the distinction whether they are occupied by a loyal communist or not. If not, they are to be

conquered, infiltrated, or neutralized, depending on the means at hand. That maximum notion is then reduced with respect to the strategically interesting organizations and positions, to the resources available, and to organizations susceptible to such an avail.

All positions in organizations of interest for the Bolshevik revolution are, because they are occupied by either the »imperialists« or the competing »social revolutionaries«, to be defined as empty, that is, as not yet occupied by a loyal Communist.

Lenin knew that competition is more dangerous than opposition. Opposition strengthens through helping in focusing behavior, whereas competition competes for similar, and scarce, resources. That is why the strategy preparing the revolution singles out positions and organizations occupied by competing social revolutionaries, whereas the strategy realizing the revolution, without loosing sight of competitors, applies to organizations and positions held by Tsarists and Imperialists.

The strategy is aptly called »strategy of access« (Selznick 1952, 113ss.). The tactics follow from that. They are an expansion of that form specifying just how the positions are to be conquered. The most important means is the use of party »agents« instead of party »members« in the traditional sense. That is why Lenin had invented the party as his interpretation of the third of Marx's »three messages« (Lenin 1913; Baecker 2002b). Party agents are susceptible to management; party members are not. Lenin shows that Communist people may replace the people occupying the positions of relevant organizations if and only if Communists understand themselves as agents of the revolution. That is what defines Bolshevism:

$$\text{management}^{\text{Bol.}} = \boxed{\text{agents} \mid \text{people} \mid \text{organizations} \mid \text{people} \mid \text{positions} \mid \text{organizations}}$$

We may note how the purpose as it is expanded becomes an image of the structure to be changed and realized.

And we may note that such a management is its own evolutionary algorithm since all positions emptied define the variation triggering the respective selections, as is the general mechanism of mobility inside organizations (White 1970). Creating a void defines actions to be undertaken. The actions spell out the kenogrammar introduced by calculating voids. The proper retention measures are self-evident as well since all depend on maintaining the form, that is on defining and redefining organizations to be conquered even if that, as the revolution proceeds, covers the whole world society. The idea of a Communist International comes in handy.

We may finally note that the most operative core of that form, the lowest level, so to speak, defines a form:

$$\text{party organization} = \overline{\text{agents}} \mid \text{people}$$

which equals the most basic form of the revolution as it is considered in Bolshevik terms. Party organizations consists in transforming people into agents as one sees fit. That is why people is redefined in terms of peasants, soldiers, workers, and sailors (Trotzki 1924). And that is why the distinction is maintained nevertheless since it is only when agents distinguish themselves from people that they can maintain their identity as agents (Selznick 1952, 36): Agents are supplied with the appropriate »theory« cherishing their sense of righteousness. They are supplied with a pure morale different from the corrupt one of Capitalists and Tsarists, thus legitimizing most kinds of betrayal of people outside the party. They are kept occupied by plenty of minor tasks in order to keep their memory of the revolution to come or to secure fresh and alive. And there is always an element of conspiracy in their activities to be sure that an appropriate distance towards everybody else (including oneself) is maintained.

The revolution itself then reads:

$$\text{revolution} = \overline{\overline{\text{agents}} \mid \text{people}} \mid \text{terror}$$

The operation, on the level of its management, is defined by agents being considered as the humans fighting for the humanized society of the future. Their social position is defined by the organizations they are working for.

»Terror«, as it were, adds to the *R*-factors of communication identified in Baecker (2002b) networking them into an overall identity of communication, eased by »accounting and control« (Lenin 1917). The only way to loosen the grip of terror on both people and agents consists in introducing and maintaining different publics offering the possibility to switch between different kinds of behavior nested within these publics (Goffman 1959; White 1995). Everybody seemed to know, already in the 1920s, that this is the reason why only marriage was able to compete with, and eventually defeat, communism (Groys 2002, 53). Marriage consists in offering and maintaining a public for both individuals involved that brings forth demands inconsistent with the publics of a society organized the socialist way.

VI. Conclusion

This paper delivers only the sketch of a kenogrammar of management. The exploration of such a kenogrammar would use all kinds of exchange and order relations in order to show how forms are used to indicate unmarked states

that are transformed by purpose into marked states (Günther/von Foerster 1973; Baecker 1999). The structure of performance in any case seems to rely on both cognition and volition able to compute well-marked empty places. Indeed, it is by indicating these empty places that feedback systems are gaining their operative control. Feedforward, then, introduces the further operation of emptying occupied places. This is what any management needs. And it defines the structure asked for by sociology to be able to watch what management is doing and how it is doing it.

References

- Ashby, W. Ross (1958): Requisite Variety and Its Implications for the Control of Complex Systems. *Cybernetica* 1, 83-99.
- Baecker, Dirk (1999): Das Handwerk des Unternehmers. Pp. 330-376 in: Dirk Baecker, *Organisation als System*. Frankfurt a.M.: Suhrkamp.
- Baecker, Dirk (2002a): *Wozu Systeme?* Berlin: Kulturverlag Kadmos.
- Baecker, Dirk (2002b): Lenin's Twist, or the *R*-Factor of Communication. *Soziale Systeme* 8, 88-100.
- Campbell, Donald T. (1969): Variation and Selective Retention in Socio-Cultural Evolution. *General Systems* 14, 69-85.
- Crozier, Michel/Friedberg, Erhard (1977): *L'acteur et le système: Les contraintes de l'action collective*. Paris: Seuil.
- Drucker, Peter F. (1973): *Management: Tasks, Responsibilities, and Practice*. London: Harper & Row.
- Emery, F. E./Trist, E. L. (1965): The Causal Texture of Organizational Environments. *Human Relations* 18, 21-32.
- Glanville, Ranulph (1982): Inside Every White Box There Are Two Black Boxes Trying To Get Out. *Behavioral Science* 27, 1-11.
- Goffman, Erving (1959): *The Presentation of Self in Everyday Life*. New York: Anchor Books.
- Groys, Boris (2002): Stalin: Das ist der Karneval. Ein Gespräch mit Carl Hegemann. Pp. 34-70 in: Carl Hegemann (ed.), *Einbruch der Realität: Politik und Verbrechen*. Berlin: Alexander.
- Günther, Gotthard (1979): Cognition and Volition: A Contribution to a Cybernetic Theory of Subjectivity. Pp. 203-240 in: Gotthard Günther, *Beiträge zur Grundlegung einer operationfähigen Dialektik*, vol. 2. Hamburg: Meiner.
- Günther, Gotthard/von Foerster, Heinz (1967): The Logical Structure of Evolution and Emanation. *Annals of the New York Academy of Sciences* 138, 874-891.
- Gutenberg, Erich (1951): *Grundlagen der Betriebswirtschaftslehre*, vol. 1: Die Produktion. 24th ed. Berlin: Springer, 1983.
- Hamel, Gary (2000): *Leading the Revolution*. Boston: Harvard Business Pr.
- Kauffman, Stuart A. (1993): *The Origins of Order: Self Organization and Selection in Evolution*. Oxford: Oxford UP.
- Lenin, W. I. (1902): Was tun? Brennende Fragen unserer Bewegung. Pp. 175-324 in: *Ausgewählte Werke in zwei Bänden*, vol. 1. Berlin: Dietz, 1951.
- Lenin, W. I. (1913): Drei Quellen und drei Bestandteile des Marxismus. Pp. 63-68 in: *Ausgewählte Werke in zwei Bänden*, vol. 1. Berlin: Dietz, 1951.
- Lenin, W. I. (1917): Staat und Revolution: Die Lehre des Marxismus vom Staat und die Aufgaben des Proletariats in der Revolution. Pp. 158-253 in: *Ausgewählte Werke in zwei Bänden*, vol. 2. Berlin: Dietz, 1951.

- Luhmann, Niklas (1996): *Die neuzeitlichen Wissenschaften und die Phänomenologie*. Wien: Picus.
- Luhmann, Niklas (1997): *The Control of Intransparency*. *System Research and Behavioral Science* 14, 359-371.
- Maruyama, Magoroh (1963): *The Second Cybernetics: Deviation-Amplifying Mutual Causal Processes*. *American Scientist* 51, 164-179 & 250A-256A.
- Maturana, Humberto R., and Francisco J. Varela (1980): *Autopoiesis and Cognition: The Realization of the Living*. Dordrecht: Reidel.
- Parsons, Talcott (1937): *The Structure of Social Action: A Study in Social Theory with Special Reference to a Group of Recent European Writers*. Reprint New York: Free Pr., 1968.
- Rosenblueth, Arturo / Wiener, Norbert / Bigelow, Julian (1943): *Behavior, Purpose and Teleology*. *Philosophy of Science* 10, 18-24.
- Selznick, Philip (1952): *The Organizational Weapon: A Study of Bolshevik Strategy and Tactics*. New York: McGraw-Hill.
- Spencer Brown, G. (1969): *Laws of Form*. New York: Julian, 1972.
- Trotzki, Leo (1924): *Über Lenin: Material für einen Biographen*. Transl. G. Blumental. Essen: Arbeiterpresse, 1996.
- Vickers, Geoffrey (1967): *Towards a Sociology of Management*. New York: Chapman & Hall.
- von Foerster, Heinz (1981): *Observing Systems*. Seaside, Cal.: Intersystems.
- von Foerster, Heinz (1987): *Cybernetics*. Pp. 225-227 in: Stuart C. Shapiro et al. (eds.), *Encyclopedia of Artificial Intelligence*, vol. 1. New York: Wiley.
- Weick, Karl E. (1979): *The Social Psychology of Organizing*. 2nd ed. Reading, Mass.: Addison-Wesley.
- Wiener, Norbert (1948): *Cybernetics: or Control and Communication in the Animal and the Machine*. 2nd ed. Cambridge, Mass.: MIT Pr., 1961.
- White, Harrison C. (1970): *Chains of Opportunity: System Models of Mobility in Organizations*. Cambridge, Mass.: Harvard UP.
- White, Harrison C. (1992): *Identity and Control: A Structural Theory of Action*. Princeton, NJ: Princeton UP.
- White, Harrison C. (1995): *Network Switchings and Bayesian Forks: Reconstructing the Social and Behavioral Sciences*. *Social Research* 62, 1035-1063.

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