Narratives in Cybernetic Logic? Wiener’s and Ashby’s Histories of Science

The Call for Papers of this conference asserts: "Some say storytelling is at the heart of social life and personal identity." It has become a commonplace to consider personal and social issues as the opposite of machines, technology, or information discourse. Even where concepts emerge that promise to meld the two, like some cybernetic descriptions of men’s bodies as feedback systems, or nerves functioning as electric circuits, these cyborgian convergences draw their fascination mainly from the supposed opposition of two. Why, then, speak about “the work of stories” in cybernetics?¹

Here at MIT a lengthy introduction to the concept of cybernetics, nor, of course, Norbert Wiener is not necessary, but the question of narration and the use of stories has rarely been discussed (except in autobiographical forms) with regard to cybernetic notions. These notions do not conceive of the world, of life, dynamics, machines or societies in terms of stories, but in formulas that include quite, if one may say so, the opposite: randomness and statistics play a significant role, causality, and sometimes linear temporality are re-defined as well as teleology (which, of course, has occurred in literary writing as well), and what might have before been coherent wholes, come to be considered as a bundle of computable, hopefully predictable elements.

However I do not want to compare narratological findings with the theorems of the cyberneticians nor to ask if their conceptions of feedback control and formularization of any event within a nerve transmitting, rocket science or state budgeting is in some way or other a kind of story.

¹ And why is the history of cybernetics important to current academic formations, e.g. in media studies? For a German review of recent publications on cybernetics, see my homepage at http://www.uni-paderborn.de/~bergerma/texte/kybrez.html.
Rather, focusing on two of the most influential writings in the field, Wiener's *Cybernetics* (1948) and William Ross Ashby's *Introduction to Cybernetics* (1956), I want to re-trace their immanent logic of rules and stories, of cybernetic laws that are said to govern dynamic systems (including everything from bacteria to men to machines, etc.) and their relations to representations of, supposedly, the same, that are not symbolized by figures, diagrams, equations, or formula of some other symbolic nature. Their applications, or illustrations, maybe the examples that gave way to the finding of the respective rule, open up a more than two-dimensional field.

When Katherine Hayles analyzed the cybernetic 'information discourse', her critique of its stripping off of materiality informed her reading. She argues, that "[f]rom Norbert Wiener on, the flow of information through feedback loops has been associated with the deconstruction of the liberal humanist subject" (Hayles 1999, 2), and "[t]he heart that keeps this circulatory system [science/culture/technologies] flowing is narrative" (Hayles 1999, 21) - in a seemingly humanistic way in order to re-introduce real embodied people into the writing of the history of science. At the same time, however, Hayles reaffirms the duality of essence and material, of mind and body. I want to claim, that narrativity is not the Other of scientific discourse but an element that is necessary and intrinsic to it. In other words, I challenge the idea of duality and oppositionality underlying the assumption that cybernetics manifests itself either a narrative practice (a practice of story-telling) or as the formulation of quasi-mathematical rules.

The highly influential *Introduction to Cybernetics* by British psychiatrist William Ross Ashby was conceived as the utmost 'story-free' theory ever: a logical set of nested rules was supposed to describe and provide formula for presumably every discipline - the world, according to cybernetics. Why exactly did it not work out (as unpublished notebooks show), and where do all these car-buying males emerge from, competing in a strange world full of dumb savages, little boys, busy housewives, tricky thieves, people with disabilities, and enigmatic machines? Unlike Norbert Wiener, whose *Cybernetics* constantly shifted from one example to the next, embodying the rules to be learned, Ashby designed exercises, playing off the opposition between bare formula against their colorful applications. As J. Hillis Miller writes (in his reading of Austin): "No example is innocent. Of philosophers and theorists in general it can be said, 'By their examples ye shall know them'" (Miller 2001, 43).

Taken together, all these separate lessons resemble an erratic narrative of the white explorer in a world of signs. But is it really the Other of the reductionist, quasi-mathematical rules? What appears as one of the most dualistic clichés possible, vacillating between an urge to formalization and the abounding proliferation of stories could be considered as evidence of rules and stories as mutually constitutive: its figurations are more than mere illustration or material of a theoretical framework.\(^2\) Their persistence reveals transitions in the histories of science.

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\(^2\) See Bergermann 2006, forthcoming.
Part 1:
Wiener’s Meandering Historiography of Cybernetics as a Meta-Translation-Machine

The links between cybernetics and the work of stories are discussed in this paper in two major narrative contexts: a) historiography, and b) the narrative presentation in stories of many small examples of how cybernetics can be applied. It is necessary to have this context in mind when discussing the introduction of a new concept, or rather, a new umbrella term for some ideas that were floating around in the 1940s.

If we assume that an ‘interdisciplinary object’ can have a history, we need to be aware that this necessarily involves the histories of many disciplines and their representatives, and that we are confronted with a situation of shared disciplinary origin and authorship from the very beginning. Therefore, it is hardly surprising that the text of Wiener’s *Cybernetics* moves in meandering leaps: between groups of researchers as well as between years, disciplines and such condensation points as dates of major publications and conferences; the text needs to unfurl all the threads contributing to the evolution of cybernetics, as much as it needs to claim this method as indispensable for Wiener, the central authority. (This is not the place for me to recreate in detail this strategy of historiographic reading. It manifests itself in meandering, historiographic sketches moving in all kinds of directions, in topographical narratives that represent ‘spaces of knowledge’ as cartographies of the often-quoted ‘no man’s land’ or of disciplines bordering each other like countries.) Yet the meandering character is inadequately represented if it is characterized merely as a sequence of historical narratives under the sign authorship. Structurally, Wiener’s introductory chapter taps some of the stylistic conventions of popular science, merging historical description with autobiographical insertions and brief surveys of disciplinary developments. This is exactly why the genre is so attractive for a larger audience: it provides an opportunity to move from one level to the next; to skip what is of no interest; to draw conclusions made on one level and apply them to another; to approach a theorem either from within a certain disciplinary context, or based on a recurring personal situation.

Does the idea of history as linear process deconstruct itself through such a textual approach? Or is *Cybernetics* simply a badly written popular history of science, a piece that failed to fulfill Wiener’s literary ambitions? The fact that the principle of single authorship does not work

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3 See the my Habilitation on *Wissensprojekte. Medienwissenschaft und Kybernetik*, where I discuss the epistemological cartographies of “Harvard,” “Mexico,” “Nancago” and the “No Man’s Land.”

4 Wiener 1964 [1956], 300 f., on working with the secretary and the importance of sound. In *Cybernetics*, Wiener combines literary and scientific examples, citing Goethe’s “The Sorcerer’s Apprentice,” English novellas, the Tales from a Thousand and One Nights, and Walt Disney’s movies, cf. Wiener 1948/1967, 175 et passim. See also Wiener’s literary productions in prose (such as *The Tempter*, New York: Random House 1959, and other novels) and poetry (MIT Archives, MC 22, e.g. Early poetry 1906, 1908, in Box 26 C, folders 421 a and 422, et passim). I thank Jeffrey Mifflin from the MIT Archives for bringing many interesting things to my notice.- As Heims shows, Wiener was also very fond of detective novels. “Using the pseudonym W. Norbert, he wrote one fiendish little story in which a brain surgeon through circumstance has the opportunity to use his talent to take delicious revenge against a mobster. [...] In another little story, published in the same MIT magazine, he teases the scientific reader with the possibility of the supernatural
coherently in *Cybernetics* (if it works at all), does not mean that coherence is entirely absent from the text, rather, it is produced by such elements as narrative, historiography, and unit of place, if not of time. The text contains quite a few of these elements, and they are located at the same level of authenticity and meaning as more specific, disciplinary comments. Whenever *Cybernetics* provides a chronological history of origins, it moves in leaps because it strives to project claims of origin and originality into the past; other (hi)stories rely on geographical terms in speak of “areas” or “fields” of knowledge.

Wiener’s multi-layered historiography is not the only narrative aspect of his text, witness elements that demonstrate cybernetics’ insistence on the comparability, mutual referentiality, and translatability of all fields of knowledge. Gillian Beer has shown how Darwin’s new historiography alluded to contemporary terminology while at the same time undermining it. The examples Wiener drew from various fields of knowledge are so numerous that it is impossible to provide a complete list. But here are two of them:

**Example 1. Man-Machine: Bodies and Tribes**

Comparing communication in individual organisms and societies, Wiener is preoccupied with man and the other social animals - with the herds of baboons or cattle, the beaver colonies, the hives of bees, the nests of wasps or ants. The degree of integration of the life of the community may very well approach the level shown in the conduct of a single individual, yet the individual will probably have a fixed nervous system, with permanent topographic relations between the elements and permanent connections, while the community consists of individuals with shifting relations in space and time and no permanent, unbreakable physical connections. All the nervous tissue of the beehive is the nervous tissue of some single bee. How then does the beehive act in unison, and at that in a very variable, adapted, organized unison? Obviously, the secret is in the intercommunication of its members.” (Wiener 1948/1967, 156)

Initially, the transferability of processes within an individual organism to processes within a society of organisms is surprisingly convincing - it works perfectly! It seems to be a universally applicable key! And we all know the BORG who perfectly performed the bee/beehive system. A few seconds later, however, confusion ensues: Does the text perform a trick and simply describe communicative sequences within an organism so that they correspond with communicative sequences within societies of organisms? And what is the implication of the desire to produce a correspondence between interior and exterior, between various channels, organs, and media - particularly at a point in the text when numerous analogies have already been proposed and examined? If the individuality of a single organism is equated with the collective and the beehive influencing experimental results.” Heims 1984, 386. See Wiener, “The brain”, and “The Miracle of the Broom Closet”, in: *Tech Engineering News*, MIT, April 1964, 26-32, 34-36.

5 Thinking of the theory of evolution, it is not surprising that there was some “work of stories” to be found. As Gillian Beer describes, to present his new ideas, Darwin had to connect them to the notions available at the time. “One means was to invent a phrase poised on the edge of metaphor, a phrase that, moreover, alluded to its predecessor, even as it undermined it: ‘natural selection’, alluding to eschatology, while at the same time introducing the contested concepts of shared kinship, layered production of life, arbitrariness,
is perceived as one piece of nervous tissue, a new unit; and if hormones circulate within a body or, in order to preserve the species, become “communal hormones” that float between bodies - then this direct relationship between interior and exterior assumes something uncanny and mysterious. Much to the reader’s relief, “the mystery” is resolved a few sentences later - the solution being communication among the individuals who compose the collective. And communication, as we all know, has become the shining core of rationality and the Enlightenment. A civilized human can see communicative processes everywhere. The cyberneticist sees himself in a jungle.

**Example 2: Savage Information**

“Suppose I find myself in the woods with an intelligent savage who cannot speak my language and whose language I cannot speak. Even without any code of sign language common to the two of us, I can learn a great deal from him. All I need to do is to be alert to those moments when he shows the signs of emotion or interest. I then cast my eyes around, perhaps paying special attention to the direction of his glance, and fix in my memory what I see or hear. It will not be long before I discover the things which seem important to him, not because he has communicated them to me by language, but because I myself have observed them. In other words, a signal without an intrinsic content may acquire meaning in his mind by what he observes at the time, and may acquire meaning in my mind by what I observe at the time. The ability that he has to pick out the moments of my special, active attention is in itself a language as varied in possibilities as the range of impressions that the two of us are able to encompass. Thus social animals may have an active, intelligent, flexible means of communication long before the development of language” (Wiener 1948/1967, 157).

What this story tells us is that if intelligence is not a problem, alertness and the ability to think logically make it possible to engage in communication in every situation; at the same time, we witness something like a narrative account of the evolutionary history of language, in which arbitrary signs acquire meaning through contextualization (“a signal without an intrinsic content may acquire meaning ... in my mind by what I observe”). Again it is a principle - the combination of expectation, data acquisition, and analogy, and the application of a code ‘interesting/uninteresting’ - that will function through various materializations and objects. As soon as the savage “shows the signs of emotion or interest,” the alertness of the observer translates ‘indicators’ into ‘signs’. In other words: as soon as the observer’s alertness combines specific impressions, “a code of sign language,” i.e. the signs and gestures traditionally used in situations when a conqueror enters the jungle, a missionary encounters savage bodies, or a hearing person meets the ‘uncivilized’ deaf person, is no longer necessary. In this well-known story of an encounter between civilization and savagery, the (civilized) Self remains at the center and controls the process of communication: ‘I’ know the things that are important to the (savage) Other, “not because he has communicated them to me by language, but because I myself have observed them.” But there is an interesting twist to the old, stereotypical paradigm: In Wiener’s story, the white man no longer brings language to the savage but appropriates knowledge by mutation, and the present not being the aim of development (Beer 2000, 6). See also Beer 1996, chapter 7: Problems of Description in the Language of Discovery.
watching, if not prying; his cultural superiority is no longer dependent on being in command of and bringing (a better) language to the savage, but on knowing how to produce a code for reading the Other. Yet the savage produces a code, too, and in doing so, he becomes the white man’s equal. But ultimately, the discriminatory difference remains intact, because the savage is ‘closer to material objects’: he looks, when Wiener thinks; at the same time, both register and organize impressions, an ability that every social animal is capable of. Wiener’s implied argument that the white ‘work of stories’ is a form of coding different from but related to savage, animalistic semiotizations of material objects is not a radical enough commentary on the logocentric tradition and, therefore, not really convincing.

Part 2: Ashby’s Exercises: An Inversion of Stories and Rules

Ashby’s Introduction to Cybernetics suggests a different relationship between rules and narratives. As important for the development of a disciplinary identity as Wiener, Ashby did not primarily engage in narrating the history of a new science. Rather, the narrative mode of his text evolved from a concrete working situation. Ashby’s Notebooks reveal that during the period before the Introduction to Cybernetics was published, he was preoccupied with developing an approach for writing a formal description of the discipline.

On Christmas Eve 1952, he made the following note: “Following a suggestion from Dad I have decided to write an Introduction to Cybernetics.” Almost exactly a year later, he put on record that he had made an effort to study all kinds of regulators, with the underlying idea of classifying them and demonstrating their relation to each other. Yet he admitted that the results were too complicated and arbitrary for being of any use in an introduction to the field. Ashby then replaced ‘classification’ with cases, crossed the word out again and, in turn, replaced it with examples. What follows is page after page of examples. After a year, it seemed impossible to register and classify such a great variety of possibilities; gradually, logic coherence, a meticulously formalized system, and the body of rules and regulations is replaced by examples.

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6 The Notebooks are still unpublished. They were handed over to the British Library two years ago but are not yet publicly available. I want to thank Dr. Jeremy John of the Manuscript Section of the British Library for his support in granting me access to the material even though it has not been catalogued.


8 In spite of recurring failures, Ashby never gave up on experimenting with the creation and formalization of complex phenomena: “As a symbol of his interest in relations he carried a chain constructed of three simpler chains interlocked in parallel; he enjoyed watching microscopic ecosystems (captured with fishpole and bottle from Boneyard Creek at the University of Illinois) for the richness of interaction they displayed, and he built a semi-random electronic contraption with 100 double triodes and watched it for two years before admitting defeat in the face of its incomprehensibly complex behavior.” Conant 2002, n.p. Still, it is widely acknowledged that “[h]is Law of Requisite Variety is perhaps the most general cybernetic law yet arrived at.” International Society for the Systems Sciences (last visit April 21st, 2005).

9 Ashby 1954, 5012 (vol.19, 2.12.54): “I have just made a thorough attempt to study ‘all regulators’, to classify them, + to show the relations between them. The results are so complicated and arbitrary as to be not worth giving, at least in the Introduction. Here I will note the main facts, so that if the question comes up again I can pick up the threads easily.”
An introduction, so Ashby’s justification of the shift in method goes, should not be too complicated; for beginners, it is advisable to study a system through examples rather than a host of major and minor rules. Consequently, the author’s task is to find suitable and representative illustrations for these rules that also lend themselves to generalization. But again, what follows are pages and pages of examples - a compilation that is more mystifying than elucidating. It seems that a large quantity and variety of illustrative observations is not so much a reason for taking pride in the applicability of cybernetic rules but a problem - a problem of reduction and abstraction.

The first 34 “examples” are questions and simple statements, clauses and key words; formally, the list resembles a collection of future exercises. According to Ashby

“...The particular cases examples that must be considered include:
1 A fly paper is regulatory, for it brings one fly to a desired position, or the number of flies to a small value.
2 The same is shown by a married couple that decides to follow the rule ‘Have children till a son arrives, then stop.’
3 Similar is the old rule ‘Heads, I win; Tails: we toss again.’
4 Shannon’s mouse, once trained, is regulatory against being put into the maze in a variety of positions; for it proceeds determinately to the goal.
5 The same applies to a living rat that knows its way about well.
6 A programmed computer is similar: started at the beginning it will go determinately to the ‘solution’ at the end. ...”

These examples are meant to be related; they are connected by phrases like similar is, the same feature is shown, by a similar rule, the same applies; they do not test or prove a rule but appear to be logically arranged. Does this mean that female infants, dead ends in a labyrinth, and an unsuccessfully thrown coin are equivalent to each other? Or is what we see here the narrative organization of a sequence for which there is also a neutral formulation (“if a occurs, repeat b until c happens”)? And is the discursive organization of the Notebooks an indication that the narrative form is considered more important than what the Introduction to Cybernetics will ultimately be about?

In the Introduction, individual exercises are not implicitly related to each other by way of being subject to similar rules, but they follow a rule - such as the mathematical concept of

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11 I go on quoting, as the Notebooks are not published as of yet:
7 The same feature would be shown by a pendulum in a viscous medium, if the centre is the goal.
8 The telephone switch that moves determinately from the first position on, looking for a disengaged line, runs determinately from state to state, till it reaches the ‘goal’.
9 Conversely, a uniselector, at any position, will go determinately from state to state till it reaches the ‘Home’ state.
10 The game of ‘Hot or cold?’ (Play it in simplified form). A rectangular grid of cells is marked. The other players select a cell without telling the one. He stands in one at random. The others give him information as if a fire were in the selected cell. He moves, partly guided by the information; partly at random. (That the Others both select the target + convey the information is unfortunate). - 11 The destroyer trying to find a submarine by movements alternating with detection.
12 A rat in a maze may know some positions but be unable (for some sensory defect) to be able to distinguish the others, e.g. no clues in 1, 2, 3, 6 [...]. - 13 I search in a drawer for a particular tie, taking up one after another without system of memory, stopping when - only when I come across it. - 14 Finding a golf-ball in an area known to contain it, by a similar rule. - 15 A decorticated rat in a maze may manage by following rule [...]
16 A man before a locked door holds a bunch of keys. He does not know which is the right one. 'Try them at random' will succeed sooner or later.’ More examples include the homeostat; dice; rules; a gas thermostat; a CO₂-regulator of brain and lungs; the brain regulating hand movements; a stable economic system; a servo-mechanism; an automatic syphon; a wash-basin overflow and variations on the homeostat.” See Ashby 1954, 5014-5016 (vol. 19, 2.12.1954).
“diversity” - in order to illustrate and further develop it: diversity within a certain quantity can be mathematically defined (based on the number of differences an observer is capable of registering).

“Ex. 1: With 26 letters to choose from, how many 3-letter combinations are available for motor registration numbers?
Ex 2: If a farmer can distinguish 8 breeds of chicks, but cannot sex them, while his wife can sex them but knows nothing of breeds, how many distinct classes of chicks can they distinguish when working together?
Ex. 3: A spy in a house with four windows arranged rectangularly is to signal out to sea at night by each window showing, or not showing, a light. How many forms can be shown if, in the darkness, the position of the lights relative to the house cannot be perceived?
Ex. 4: Bacteria of different species differ in their ability to metabolise various substances: thus lactose is destroyed by E.coli but not by E.typhi. If a bacteriologist has available ten substances, each of which may be destroyed or not by a given species, what is the maximal number of species that he can distinguish?
Ex. 5: If each Personality Test can distinguish five grades of its own characteristic, what is the least number of such tests necessary to distinguish the 2,000,000,000 individuals of the world’s population?
Ex. 6: In a well-known card trick, the conjurer identifies a card … […]
Ex. 9: If a child’s blood group is 0 and its mother’s group is 0, how much variety is there in the groups of its possible fathers?” (Ashby 1956/1970, 125)

Logical thinking permeates the world, from the most natural (bacteria) to artificial (signs of light) settings. Often, people employ tricks that help them to cope with the natural parameters inside their culture - paternity tests, personality tests, livestock breeding, biological experiments. But in addition to being a tool for people to manage these and other kinds of situations in their lives, such exercises also serve a didactic purpose since they are but another step towards the difficult mathematical formula.

A farmer can distinguish between chicks according to breed, his wife according to gender. If I want to do the math based on this setting, I have two options: 1) This setting has to remind me of another, i.e., I must forget the farmer and his wife as well as their chicks in order to come up with two yes/no operators and a duadic and octavic object. Or is the trick that I 2) must think of exactly this farmer to get a better, clear and vivid idea of diversity? Would this example help me to come up with a model for the distribution of bacteria? Learning how to see one thing through another, a set of rules or the ‘classic example’, through individual animals, people and playing cards - that is what is so enjoyable in this set-up and its ultimate goal. The sequence of rules and exercises does not, however, include the transition ‘from example to rule’. The logarithmic formula cannot directly be deduced from the chicken coop, which is why we need another disciplinary tradition.

Concepts such as race and gender will be established as meaningful constituents within a decade after the publication of the Introduction to Cybernetics, a text that treats them as quasi-numeric, emblematic categories. This suggests a formal equality among all parameters, but in the examples, the ‘savage’ is always less intelligent than his civilized counterpart, and all men are superior to women (whether they buy cars, feed their families, or father sons - unwritten
laws can be found throughout the entire book). It is exactly when abstraction promises semantic neutrality that this neutrality is thoroughly revoked.

**Gendering Examples**

The gender politics implied in such oppositions as “weak/subjective” vs. “unambiguous/objective” are not the exclusive domain of Ashby’s numerous examples, all of which he seemed to have borrowed from some 1950s picture books that not only promised new domestic bliss to women who had lived rather autonomous lives during and immediately after World War II, but also glorified the world of technology and progress dominated by men; Thomas Kuhn, Ashby’s contemporary with whom he also shared the same gender and nationality, describes the relationship between the philosophy of science (the authoritative discourse for the analysis of rules and structures) and history (a discourse relying on examples and narratives) as a marriage - one that is boring and antiquated like marriages in bad jokes. Making an argument in support of a clear difference between the two discourses, Kuhn wrote: “What we need will be less likely engendered in a marriage but through an active dialogue.”\(^\text{12}\) The implication is that ‘passivity’, in this sentence denigrated ex negativo, bears striking similarities to Ashby’s ‘weakness’. Even if not among scientists, an ‘active dialogue’ definitely happens between teacher and student, father and son. In the exercises, boys take apart cars, family men are hunters who provide the food even in difficult times, women are housewives, and girls do not exist. “An example would occur if a husband, selecting a new car from the available models, first decided that it must cost less than £1000, and then allowed his wife to make the remainder of the selection. It would occur again if the wife, having reduced the number to two models, appealed to the spin of a coin to make the final decision” (Ashby 1956/1970, 258). It is hard to resist the temptation to recommend the dog as the one who selects the color of the upholstery. Without arguing for a simple abolition of the difference between rule and example, one cannot help but notice the special twist such intense gendering gives to the bipolar structure of cybernetic discourse. If the man selects the model of the car and the woman leaves the final decision to a coin, then the example’s credibility rests on a procedure similar to the illustration of a rule by/in an example; the differentiation between rule and example has become an intrinsic part of the example. The more cybernetics insists on abstraction as the solution, the more sumptuous the ornament.\(^\text{13}\)

Explications of cybernetic principles are provided in words, equations, graphs, and tables, immediately followed by examples of their usage. The didactic logic corresponds with the hierarchically organized epistemic logic; central concepts are surrounded by exercises; the intrinsic, argumentative structure of concepts is linear, whereas examples can be repetitive and form parallel logics; they unfold and expand a topic outside the center of a paragraph, tell little

\(^{12}\) Kuhn 1977.

\(^{13}\) An archive that is simultaneously alarming and promising. At least Kuhn pointed out that examples are not only important for an introduction to a discipline, they are also a discipline’s encyclopedia: scientists acquire and store knowledge by using common examples, the pantries of a discipline’s history. Kuhn 1974, 408.
stories until discussion of the next concept sets in; examples are the border zones between concepts. This logic topography of a concept’s marginal, interior and exterior regions (or, to put it differently, of a concept-example combination) provided a reason to further investigate the oppositional patterns based on matter-form variations in other areas.

The End: Borders Unfolding. Stories and Science

In addition to telling temporal and spatial stories, a third narrative strategy employed in hi/stories of cybernetics are accounts of the discipline’s forms of knowledge, an outline of translation as epistemological form. The topological arrangement of exercises and concepts is reminiscent of Derrida’s description of genre, in which he expounds the opposition of interior and exterior (that manifests itself in the comparison of exemplary story and rule or law) and characterizes it as inversion.

If, according to Derrida, a genre can only be conceptualized by drawing a borderline between genres, and if the borderline is always already a part of the genre, then the inclusion of the margin becomes impossible. True, the relation between a name of a genre and the corpus to which it refers is not the same as the relation between example and rule; what these two sets of relations do have in common, though, is their preconditional marginality, a “participation without belonging” (Derrida 1992, 230). The linguistic unit located at the margin of a work is simultaneously inside and outside. It holds the work together and prevents its closure (“it gathers together the corpus and ... keeps it from closing, from identifying itself with itself”, 231); therefore, it functions more as a “clause” or a “floodgate” than as a “boundary”. In that regard, Ashby’s Introduction seems to be rather contradictory: anxiously concerned with the identity of the new discipline, its coherence can only be achieved through proliferation; the examples are “floodgates,” tools of transferral; transpositional instruments for learning how to grasp the world unfolding their endless diversity against the background of an assumed essence, which, in turn, already implies a separation from other essences.

In another topology of the rule and its Other, Giorgio Agamben’s Homo Sacer, rule and exception to the rule belong together: “The state of exception is [...] not the chaos that precedes the order” (Agamben 1998, 18), but exemplifies sovereignty. “The exception does not subtract itself from the rule; rather, the rule, suspending itself, gives rise to the exception and, maintaining itself in relation to the exception, first constitutes itself as a rule” (ibid). While an example exists as one only by virtue of being isolated (an “exclusive inclusion,” 21), by being excluded from the regular case, to which it does not belong, it also “exhibits its own belonging to it” (22). This, then, is the very power of the rule: “To refer to something, a rule must both presuppose and yet still establish a relation with what is outside relation (the nonrelational)” (19). It cannot exclude the unruly or anarchic but must establish a relationship to its exterior.

14 For an inspiring look at Comparative Literature’s handling of similar issues, see Haun Saussy, forthcoming.
Speaking of a “pure rule” implies speaking of something that exists merely as an “empty form of relationality;” that is, a “pure rule” is no longer a rule but an exception. And just like this “indention” is a spatial paradox, it is also a paradox in the fabric of time and causality. As a form of supersession (Aufhebung), the exception is not the chaos that precedes the rule but closely linked with it. It is “the situation that results from its suspension. In this sense, the exception is truly, according to its etymological root, taken outside (ex-capere), and not simply excluded.“ (18)

In exception, the old meaning of exemplum is still audible, and this word signifies “the sample selected from a variety of similar objects.” The definition also implies a sequence, an inverted procedure. Against this etymological background, it makes no sense to speak of life, the world, exemplifications preceding the existence of rules; it makes no sense to think rules without thinking of that which is unruly, in need of being regulated. And this also applies to the Introduction to Cybernetics: the rule is not that which is defined by Ashby as rule or principle; it is not that which is numbered, neither the individual example nor the combination of example and application but the (“empty”) relationality of rule and example; still, the rule is not a fixed point or line but unfolds in a “zone” - and within this zone, it is no longer possible to distinguish between principle and life, between a rule and its application.

Now, based on these observations, can we say that cybernetics has a hi/story? Does it exist in cross connections, in the structures provided by intermediate zones and transportations? Is it a framework? How are we supposed to imagine something that is simultaneously engaged in: a) collecting analogies, creating a metatheory as well as a boundless wealth of material; and b) defining as doctrine the search for analogies as well as the pure principle that is not bound to matter? How to understand the promise to fundamentally dissolve the opposition between intelligibility and materiality while, at the same time, argumentatively relying on that very opposition?

We assume that Wiener’s beehive, tree roots and the switchboard are, indeed, connected; that it means something if he sets these entities into a relation with each other; we substitute them with as yet unnamed relations, but we can do so only because we know something about as many areas of knowledge as possible (and sometimes even engage in educated guesses), because we form analogies and believe in formal correspondence. In short, we can do all this against a background shaped by the objects of our epistemological desires. The work of stories is anchored in the power of imagination and projection15, in the possibility of transferring concepts, ideas, and knowledge from one discipline to another in historiographic forms - and in the fuzziness that holds all these elements together and makes them so effective and so popular. It is in the “empty relationality” of zones created out of rules and examples, regulations and hi/stories where we will find the productive power of writing science.

15 Gillian Beer has pointed out this force in Darwin’s writings: “Evolutionary theory is first a form of imaginative history. It cannot be experimentally demonstrated sufficiently in any present moment” (Beer 2000, 6).
Bibliography


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