

A Heuristic Sketch of Lee Thayer's Systems Theory Orientation to Human Communication: Reflections on the Range of Open Systems

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Abstract: This paper sketches some of Lee Thayer's General Systems Theory contributions to human communication. It reviews some of the main differences between closed and open systems and stresses how the radical "openness" of human communication systems offers both challenges and opportunities.

Keywords: Lee Thayer, Ludwig von Bertalanffy, Open Systems, Closed Systems, Symbol, Information, Communication, Communication Theory, Explanations

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“Ludwig von Bertalanffy himself has often seemed to equate human communication theory with Information Theory or (electronic) Communication Theory, both based in the physical properties of the materials, devices, and particular medium (air, water, space) involved in the electronic transmission and acquisition of data. Many spokesmen for general systems theory do not address themselves to the phenomenon of human communication at all. Among those who do, many seem to assume that there are no theoretically significant differences between an electronic data system and a human communication system.” (Lee Thayer, 1987, pp. 94-95)

1 Introduction

This paper outlines the intersections between general systems theory (G.S.T.) and human communication theory by drawing mainly, though not exclusively, upon the works of Lee Thayer (1968; 1987; 1997; 2009; 2011). Thayer’s early career started, in part, by trying to get scholars, often researchers in the physical and social sciences, to understand how human communication systems are characterized by properties and dynamics beyond those found at other levels of life and well beyond those found in the realm of inorganic matter. His work outlines and illustrates the unique quandaries and perplexities of human communication, frequently documenting the pivotal roles played by imagination, self-consciousness, “telesitic behavior,” and extensive organismic plasticity. Often metaphorically trading upon the distinction between closed systems and open systems, he began by highlighting and stressing the largely open nature of human communication systems. In time, he increasingly turned his attention to the varieties of “openness” within and across cultures and subgroups, and, even more recently, he has spelled out some of the basic principles that strategists, leaders, and other communication practitioners use to functionally close systems that otherwise would remain too open. This has been done, primarily, by identifying the ways that “explanations” (e.g. excuses, reasons, rationalizations, explanatory claims, and especially self-explanatory behaviors) operate within human communication systems of all sorts and sizes.

Before advancing any further, I should say at least a couple of things about Lee Thayer and my relationship to him. Thayer, not tightly affiliated with any particular theoretical orientation and not part of the media ecological canon, has always been a bit of an intellectual maverick, and he is known in different ways in different circles. In my experience, if you ask people if they know of Lee Thayer, among those who have heard his name, some will say, “You mean the systems theorist from years back?” Others say, “You mean ‘the Wizard of Org.’” while others still, say “The guy who does the multidisciplinary communication theory stuff?” To any of those responses, I generally say, “Yes, that’s the guy.”

Thayer was a Fulbright Scholar in Finland, a Ford Foundation Fellow at Harvard, the first Distinguished Gallup Professor at the University of Iowa, former director of their Advanced Center for Communication Study, past-President of the International Communication Association, and the 2008 winner of the Media Ecology Association’s Louis Forsdale Award. While at Simon Frasier University, Thayer founded the metadisciplinary journal *Communication* (1974), where he put together a legendary, all-star editorial board (also see Anton, 2014). He is author and editor of well over a dozen books (including *Communication and Communication Systems*, *On Communication*, *Pieces*, and *Explaining Things*), and he is most well-known for his work on systems theory, ethics, general semantics, multidisciplinary communication theory, leadership, and organizational



transformation. As one final point, the first edition of Stephen Littlejohn's widely used textbook *Theories of Human Communication* (1978) devotes its opening section to Thayer, and Littlejohn summarizes Thayer's work as "distinctly multidisciplinary and systems-oriented and one of the most thorough macro-treatments developed by a single person" (p. 48).

I personally met Thayer in 1989, at the University of Wisconsin-Parkside, where I was still a psychology undergraduate and he was the director of the Honors College and chair of the Communication Department. After taking my first class with him, a course called "Communication and the Human Condition," I declared a double major in psychology and communication, and I took about 27 credits with him. The classes he taught had titles such as: "Language, Thought, and Communication," "Knowledge and Decision Systems," and "Influence and Enterprise." Over the years, Thayer and I have stayed in regular contact and have worked together on some projects. I also should add that the first issue of my three-year editorship for the journal *Explorations in Media Ecology* (2008-2010) was devoted to Thayer and his many accomplishments. Few people have as robustly extended and applied the logic and overall orientation of G.S.T. to human communication systems of various sizes, and no single person has had more of an influence on my scholarly development and career trajectory.

Let me now move on and attempt a heuristic sketch of some of his main criticisms, advancements, and contributions.

1.1 Systems within Systems: Open and Closed

Communication processes are fundamentally systemic in nature. They occur within multiple, various, and overlapping systems (cosmic, physical, chemical, environmental, political, economic, social, psychological, technological, etc.). And, systems can be analyzed at different levels. This means that physical systems, including their properties and dynamics, underlie chemical systems, including their properties and dynamics, which underlie biological systems, which, also in turn, underlie all of the various cultural, linguistic, social, economic, and technological systems that make up our modern human world. But, and this needs to be underscored, the cultural and social properties and dynamics that emerge from the biological realm cannot be reduced to it, just as the biological systems that emerge from chemical and physical systems cannot be reduced solely to the properties and dynamics occurring at physical and chemical levels (also cf. Mayr, 2004).

We will also need, before advancing any further, to differentiate between (1) "*data systems*," systems that hold variety and patterns as well as forms of operative syntax and/or functional organization, (2) "*information systems*," which build upon data systems, emerge out of the inorganic realm, and where variety and pattern can become "coded" or "marked" within various "contexts of choice" according to diverse modes of biological goal-seeking, and finally, (3) "*human communication systems*," which include the two kinds of systems just mentioned, but also incorporate "culture and symbolic language," "transactional transformation," and all of the opportunities and problems associated with various "choices of context" (cf. Thayer, 1987, p. 104-109; also cf. Wilden 1987; Lanigan, 1992).¹ Regarding

1 Beyond the scope the present essay is to address all the ways in which "context of choice" and "choice of context" play out in semiotic theory. In the context of the present paper, it might help clarify what is at stake if we slightly reword the expression. Consider it, rephrased, if you will, as the difference between "a probability context" and "variety regarding probability contexts." In the former, we have spelled out more explicitly what is needed for mathematical information theory. Context of choice ("a probability context") gives data/information by having a certain context where different options can occur with varying probabilities. Binary is 0 or 1; written English has 26 options to choose from; different languages have different numbers of basic phonemic units from which to draw when speaking. One can even imagine words themselves, in the act of selection and combination, occurring within a context that has a calculable probability depending upon other words in the expression. Now, imagine an



the differences between data, information, and communication, more will be said as we move along.

Beyond clarifying how hierarchies of systems are embedded within systems and in addition to alluding to the theoretical differences between “data,” “information,” and “communication,” we will need to distinguish at length between two main types of systems: “open” and “closed.” This rich conceptual distinction needs the most thoroughgoing interrogation, and, especially pertinent are questions regarding possible ranges of “openness” within different systems.

1.1.1 Overview of Open and Closed Systems

Beyond clarifying how hierarchies of systems are embedded within systems and in addition to alluding to the theoretical differences between “data,” “information,” and “communication,” we will need to distinguish at length between two main types of systems: “open” and “closed.” This rich conceptual distinction needs the most thoroughgoing interrogation, and, especially pertinent are questions regarding possible ranges of “openness” within different systems. “Closed systems” are relatively separated off and/or have little to no exchange with their environment. In contrast, “open systems” require exchange with their environment for their own continuance, and, some open systems can use feedback to regulate themselves toward their steady states. Other significant differences between closed systems and open systems concern the kinds of energy that can be drawn upon and/or made available for certain kinds of work. Physical systems and chemical systems, predominantly closed systems, can be reduced down to a few principal factors: law of gravitation, laws of motion, and the second law of thermodynamics, all conspiring as forces acting upon some system so as to move it toward a state of equilibrium, meaning that modes of kinetic and potential energy within closed systems can be harnessed to perform work. A clear example is how the force of gravity upon water flowing down a hill means that the kinetic energy of the uneven slope can be used to get work done; a waterwheel placed under a small waterfall can be used to do work or to generate and/or store other forms of energy. Highly similar but much more contained and subtle dynamics operate a thermostat. Here, air molecules distribute themselves thermodynamically according both to prior trajectory and to the room’s shape, size, and temperature gradients. In addition to this kinetic energy, there is energy harvestable for work in the thermocouple’s natural movement toward equilibrium: it expands or contracts according to room temperature.

We can ease the transition from these closed systems to a consideration of open systems, not by turning immediately to the clearest case of open systems (i.e. biological systems), but rather, by considering the example of a lit candle (see Koehler, 1970; von Bertalanffy, 1967). The flame atop a candle, though obviously not alive, is, interestingly enough, a case of an open system. The candle itself, until lit, remains closed off as a store of chemical energy, but once the wick is ignited, the candle flame is better theorized as an

older couple at the dinner table where one points and says to the other, “Can you pass the salt?” At the level of information theory, (context of choice; a probability context), the options are largely between whatever items were on the table, perhaps only pepper but maybe sugar or other condiments. The other person, though, in passing over the pepper, might say, “I’m sorry, but you know you have a heart problem.” This illustrates choice of context (“variety regarding probability contexts”) and hopefully clarifies the key difference between information theoretic models and communication theoretic ones (also cf. Anton, 2012). This also partly offers an account for how and why probability statistics for “the same event” can vary. For example, imagine a person who has just flipped a normal coin to heads 80 times in a row (a very unlikely event!). The person is now going to try for the 81st head in the sequence. Someone might try to argue that the odds of a head coming up remain, at each flip, roughly 50% because each is a “single trial.” The trouble is that a particular flip can be calculated quite legitimately according to the probability statistic of the entire sequence. The important point is that each statistic (“81st in a row,” or, “single trial”) works as “a probability context,” and yet, choice of context, in this case, which probability statistic to use, remains the key issue for communication theory. Parenthetically, it should be noted that Claude Shannon made quite a bit of money gambling and in the stock market.



open system. The flame consumes the air, and, depending upon air and room conditions, can change shape and size in accordance with its rate of air consumption. But, eventually, the candle burns itself out. In this way, the flame itself seems quite organic; it “lived,” “grew,” was in constant interchange with its environment, and eventually, “died.”

In the above cases (waterfall, thermostat, and candle), the “behavior” exhibited and work performed occurs mainly because people can strategically take advantage of the ways that matter/energy is subjected to physical laws, including its flowing toward equilibrium according to the second law of thermodynamics. Inorganic systems such as those just mentioned *cannot* follow out the path of least resistance, nor can they veer off from moving along in the direction of the net sum of prior and combined molecular trajectories.

Living organisms, the best example of open systems, differ significantly from the three systems just mentioned. They fundamentally require energy and exchange simply to maintain themselves; they are “negentropic”. Living beings momentarily stave off the second law of thermodynamics by importing various materials (including food and air, forms of chemical sense-data, socially coded symbolic patterns, etc.). They increase order within themselves while exporting increasing amounts of disorder into their environment. They therefore never actually escape entropy; the entire system in which they are embedded, their total environment plus themselves, never violates the second law.

Living systems, always subsystems within physical and chemical systems, are fundamentally open systems. Nevertheless, they are not merely “things acted upon,” nor are they adequately understood if we conceive them as “robotically” following out physical laws grounded in the demand for equilibria. This is, arguably, where Ludwig von Bertalanffy was most robust and potent. He showed with great rigor how biological systems, cells, and living organisms have capacities to regulate their movement, internal temperature, and their energy expenditure. Living organisms need not follow out the paths of least resistance. They are not simply moved toward “equilibrium” by outside forces according to the second law of thermodynamics, but rather, living organisms are active self-regulating dynamic systems that can establish a “steady state” in contrast to what would be equilibrium for the larger physical system. He also helped to add counter-weight against the growing trends toward reductionism by revealing how organic wholes exhibit properties and dynamics not fully explainable by physics or chemistry alone.

Given this loose and quick review of closed and open systems, the task now at hand is to mediate between von Bertalanffy’s rich early conceptual developments and Thayer’s appropriations for practical purposes within human communication and/or strategic organizational communication systems design. In a recent personal correspondence, Thayer candidly shared with me the basic impetus behind G.S.T. as he understands it and how it bore upon the early study of human communication. Stressing the overall anti-reductionist trend within G.S.T., Thayer writes,

When von Bertalanffy, who as you know was one of the originators of the field, spoke or wrote about systems, it was almost purely conceptual. In my view the distinction he wanted to make was this: The rational or scientific view of the world, which was beginning to flower in the late 19th and early 20th centuries, reduced explanations of how things worked in the world to cause-and-effect thinking. If there was a specific effect, there must have been a specific cause. Systems thinkers, and there have been many of them—like Churchman and Boulding and Polanyi and Vickers and Simon—intended to make a distinction they considered critical not just to the social sciences, but to science in general. And the distinction they wanted to make is between that cause-and-effect thinking...and a way of thinking about the world as comprised of



nested systems—from the smallest particles to world conflicts. A friendship is a system. So is a war. Both are far more complex than cause-and-effect thinking would lead us to believe. In every sort of social system, there are pushes and pulls that are not evident until you go looking for them. No one fully understands the stock market because that is a very open system. But then it sometimes happens that the system that gets constructed from the conversation “I love you,” “I love you too,” becomes so complicated it can only be approached from a systems point of view. (private email, Oct. 2013)

Much of Thayer’s work, especially in its early articulations, underscores how human systems hold unique properties and dynamics well beyond those found in other living systems. He also reveals how much that uniqueness comes from the range in kinds of codification and the degree of openness that humans have vis-à-vis their environments (human wonder, questioning, self-talk, self-examination, technological innovation, morphogenic change, etc.).

Thayer has been quite influenced by and receptive to von Bertalanffy’s ideas regarding the differences between humans and other organisms. Much of von Bertalanffy’s writings thoughtfully address human psychology and how it cannot adequately be reduced to models based in “reactions” of the “stimulus-response” variety. Moreover, von Bertalanffy himself, in his ‘Heinz Werner Lecture,’ published as *Organismic Psychology and Systems Theory*, outlines the uniquely human dimension by making recourse to “*the symbol*,” which he further specifies as “*representative*,” “*transmitted by tradition*,” and “*freely created*” (1966, p. 15). In this lecture, von Bertalanffy also alludes to E. Cassirer and S. K. Langer (two scholars well known within media ecology and communication studies) and stresses the importance of their scholarship. Human beings, he further argues, do not merely live amidst material things such as food and shelter as do other animals, they also, fundamentally, dwell in *symbolic* relations. Very well. So far, so good.

The place where Thayer (and perhaps many media ecologists too) would like to begin a dispute with von Bertalanffy can be identified as we continue on in his ‘Heinz Werner Lecture.’ He summarizes his own position and offers six useful benchmarks for comparison. I quote him at length:

Phylogenetic evolution based on hereditary changes is supplanted by history based on the tradition of symbols...Secondly, actual trial and error is replaced by reasoning, i.e. trial and error in conceptual symbols...Thirdly, symbolism makes true or Aristotelian purposiveness possible. The future goal is anticipated in its symbolic image and so may determine present action...Fourthly, the symbolic universes created by man gain autonomy or, as it were, a life of their own...Thus to the great levels in the observed universe: those of inanimate and living nature, a third, symbolic universe is superimposed: that of culture, the objective spirit after Hegel, the noosphere after Teilhard de Chardin, the meaningful superorganismic realm of Sorokin, etc.. The autonomous laws of a certain symbolic universe—that of discursive symbols—lead to a fifth consequence. The system wins algorithmic properties. An algorithm is a system of symbols connected by pre-established rules. This is the case in mathematics, from elementary arithmetic to any highly developed calculus, but also vernacular language...This is the essence of prediction in science and of control of nature in technology. Sixthly,...Owing to their immanent dynamics or laws, symbolic systems may become more potent than man, their creator. Then symbolic entities—status, religion, party, nation, what have you—may govern men and human behavior more strongly than biological reality or organismic drives. This is the basis of the most sublime achievements of man; but it is also the cause of all the follies of human

history...The evolution of symbolism is the basic problem of anthropogenesis. (von Bertalanffy, 1966, pp. 17-19; also see von Bertalanffy, 1967, pp. 33)

What a wonderful condensation! This so well summarizes and encapsulates the beginnings of a robust conceptual framework, and *almost all of it* would be heartily embraced and endorsed by Thayer and most media ecologists. But we can already anticipate some trouble in his use of the word “laws” at the end of his proposition four. And, the stickler, the real trouble, is proposition five. In fact, if one were to clip out the whole of proposition five, this distillation might not call forth much, if any, dispute.

Part of the conceptual slipperiness seems to have occurred as we moved indiscriminately from “laws” which bear upon particular, individual cases within physical and chemical systems to those historical or sociological “laws” which cannot be directly brought to bear upon particular individuals or organizations per se². Without acknowledging this subtle change in the level of analysis, conceptual confusion likely prevails. Said quite otherwise, we might want to ask, how exactly can symbols be “freely created” but also be “algorithmic”? Might we be able to agree with von Bertalanffy’s above characterization, but still maintain that “prediction” and/or “control” can perhaps be algorithmic at one level of analysis without it becoming algorithmic at all levels? Part of what is at stake can be phrased in the question: *just how “open” of open systems are human communication systems?*

The “mathematization” of human communication systems seems problematic, as is perhaps apparent, because the word “symbol” remains ambiguous in this context; it slides around between data, information, and communication.³ It is almost as if the very real tension between “*transmitted by tradition*” and “*freely created*” is unwittingly resolved at a larger level of analysis toward the side of tradition. But symbols, if we adhere to von Bertalanffy’s definition above, must mean more than mechanical “data,” and, they must not be confused with the many forms of “information” used by biological systems, especially those than can be brought to algorithmic models. In a word, humans can be predicted and controlled in their physicality and in aspects of their animality but not in their personal communication.⁴

2 This is not meant to suggest that von Bertalanffy was unaware of the differences, but there remains an equivocation in his writings, if only in that some physical systems can only be dealt with in terms of statistical averages (thermodynamics) whereas others can, in fact, be determined and handled in applied cases and self-contained machines using laws of gravity, motion, magnetism, etc. Hence, when von Bertalanffy points to some of the ways the phenomena of interest within the social sciences obey “laws” similar to the ways that phenomena in the physical sciences do, he means exclusively the former rather than the latter. He writes,

We cannot run after each of the innumerable molecules in the container but their resulting average behavior is expressed in the second law of thermodynamics and its many derivatives. Similarly...the insurance business is based on the fact the number of car accidents, mortality and the like are predicable, even though each individual case is different and results from a multitude of undefined causes. (1967, pp. 57-58)Note, too, that von Bertalanffy also acknowledges that, “The interdependence of the two problems—the theoretical problem of recurrences, laws, cycles in history, and the very personal one of our own present and future—has given the dispute a bitterness otherwise lacking in scientific enterprise” (1967, cf. pp. 101-105).

3 It is worth noting, in this context, that the revised edition of *General Systems Theory* includes an appendix regarding the robust ways mathematical systems theory has rapidly grown.

4 Beyond the scope of the present essay would be to consider the ways in which any symbolic sign (which also by default has “indexical” and “iconic” properties at other levels of analysis) could be mathematized, but only in terms of those indexical and/or iconic dimensions (cf. Anton, 2012). And admittedly, and in his defense, von Bertalanffy was not blind to the problems of reducing humans to data handling sciences. In the foreword to the first edition to *General Systems Theory*, he writes,

The student in ‘systems science’ receives a technical training which makes systems theory—originally intended to overcome current overspecialization—into another of the hundreds of academic specialties. Moreover, systems science, centered in computer technology, cybernetics, automation, and systems engineering, appears to make the systems idea another—and indeed the ultimate—technique to shape man and society ever more into the ‘mega-machine’ which Mumford (1967) has so impressively described in its advance through history (pp. vii-viii).



And, here, too, we can find von Bertalanffy seemingly wanting it both ways. On the one hand, he suggests that this general multidisciplinary orientation can be brought fairly inclusively to all the social sciences. Consider the scope and overall orientation to his *General Systems Theory*. His text somewhat makes it seem that G.S.T., now in only its embryonic stage, will one day reach full maturity, and when that happens, all the sciences (physical, biological, historical, and social) will be grasped and mathematized in their systemic nature. However, von Bertalanffy also admits serious limitations when ideas taken from the physical and life sciences are *literally* carried over into other fields of investigation. Underscoring the downright obvious metaphorical meaning of the word “organisms” when referring to organizations or societies, von Bertalanffy writes,

Another semantic problem is implied in ‘organismic’ theories of sociology and history. Spengler called the great civilizations organisms with a life cycle including birth, growth, maturity, senescence and death; an enormous host of critics proved the obvious, namely, that cultures are not organisms like animals or plants, individual entities well-bounded in time and space. In contrast, the organismic conception is rather well-treated in sociology because its metaphorical character is well understood. (1980, p. 202; also see pp. 116-119)

Two points need to be made about this remark. First, von Bertalanffy suggests that it is *obviously* a metaphor and that people operate better with this openly acknowledged. Fair enough, but that seems a bit counter to the claim that G.S.T. applies to human communication with algorithmic rigor. Second, he suggests that this is a “semantic problem.” I think we all know what he means, and yet, this might be, viewed from another angle, an essential part of the issue that needs much further clarification. Might calling the ineradicable slipperiness of everyday language “a semantic problem” be problematic, or at the least, point us to the kinds of questions we still need to raise?

Thayer’s own thinking, as already suggested, has been highly influenced by the logic and insights of von Bertalanffy’s work, and, furthermore, Thayer is deeply aligned with the robust interdisciplinary project that von Bertalanffy sought and advocated. One might say that Thayer’s work (and much media ecological work too) picks up on von Bertalanffy’s project by both celebrating the metaphorical, the “freely created” symbol, and by recognizing that the kinds of “laws” within human communication will never be exactly like those in the physical or the biological or even the economic realms.⁵ Human communication, as a whole, is the most open of all open systems. The task, then, is to differentiate human communication from information exchanges or data transmissions (while also recognizing how communication incorporates data and information), and ultimately, to learn how to bring G.S.T. sensibilities to human communication more generally.

1.1.2 Human Communication as Open System

Communication, from Thayer’s vantage, appears as one of two basic life processes. Just as living organisms must take in nutrients, metabolize them, and expel wastes, so too, people must, more or less selectively, take in various forms of data and information as well as expel any related wastes. Communication, then, is not something that someone does to someone else, nor is it something that two or more people do to each other. It refers, much more basically, to the process of “taking-into-account” (cf. Thayer, 1968; 1987). Nevertheless, the theoretically demanding undertaking is to clarify, precisely, how the human body, modes of

⁵ See McLuhan and McLuhan on the Laws of Media. Also see forthcoming work on formal causality, which admittedly makes for a sense of prediction but not one based in material or efficient causality.



technological mediation, and various forms of intersubjectivity can be integrated to re-organize an organism's natural, egocentric "take-into-account-abilities" into the self-reflexive self-consciousness that people experience in today's modern world. In a word, it can be difficult to put into adequate perspective the degree to which intersubjectivity and modes of technological mediation, both historically and ontogenetically, precede an individual's conscious experience of "subjectivity."

This further implies that within closed mechanical systems, whole and parts are pre-set and basically unchanging, whereas within human communication systems, wholes and/or parts operate as "holons," Janus-faced entities that can be treated equally as part or whole depending upon vantage and orientation (cf. Koestler, 1967). For example, words, statements, and/or conversations; selves, communities, and/or cultures; bodies, goals, and/or media technologies, each and all of these are either whole or part depending upon the level of analysis and purposes of inquiry.

Much media ecological work has been quite successful in revealing how the "self-conscious" experience that many contemporary individuals take as "natural" or "given" remains, in actual fact, inseparable from the socio-historical conditions and the technologies (the whole system) by which that self-consciousness is manifest and realized (cf. McLuhan 2003; Ong, 1982). In some fundamental ways, then, individuals gain a certain hold of themselves only through methods and technologies of grasping and holding that others have enabled. The most basic example is that individuals learn their language(s) from others around them, and then, their emergent inner self-talk operates as a *function of* various intercommunication connections with particular others. Thayer observes that, "Two or more people in continuous or recurrent intercommunication comprise a second-order communication system. Such systems have properties of their own, which are not necessarily the properties of any of the individuals involved. These emergent properties function as system determinants" (1987, p. 80). Said quite otherwise, one's relationship to the environment is not merely mediated by language nor by various technologies, but by other people (also see Anton, 2014). Through acculturation and socialization, through conversation and discussion, our minds become co-opted and colonized. Absent others imperceptibly "slide between" the environment and ourselves. It is as if we come to know the world, to think about it, and talk about it "on their behalf." Particular others, those who we talk with or those whose writings we study (or both), become mediators of our minds, stitched into the fabric of self-awareness. This also means that people can be "in" communication systems where face-to-face conversations are subtly haunted by invisible distant others: parents, friends, confidants, advisors, bosses, and coaches. Absent others—those whose symbolic presence serves to filter, regulate, and re-contextualize the words and deeds of persons in living face-to-face encounters—become an inseparable part of the actual whole of a particular communication system. The lines of human communication systems can remain exceptionally fuzzy and protean, and modern individuals may feel the inward pull of different social bonds warring it out, as it were, within their own self-consciousness.

Within human communication systems, codification systems are largely shared but are intersubjectively structured and distributed such that each individual can, and often does, re-codify and re-contextualize information offered by others. This *de facto* renders people capable of imaginatively re-contextualizing environmental data and social information through different experiential centers. We can imagine how others will see things, including how they might respond to what we might say. But we also can be (and often are) quite wrong in this regard. Sometimes we misunderstand a prior conversation, and, at other times, the person we spoke with earlier now has changed his or her mind.



1.2 Conceptualizing “Open and Closed” within Human Communication Systems

More still needs to be said regarding the origins and/or sources of the kinds of openness that characterize human communication. As von Bertalanffy (1966; 1967) points out, we commit “the anthropomorphic fallacy” if we impute human-like capacities to other organisms, but he also rightly suggests that we commit the opposite fallacy, “the zoomorphic fallacy,” if we imagine there are no distinguishing human characteristics.

1.2.1 The Scope and Range of Openness

Human communication systems are characterized by radical openness. A significant source of the openness comes from the sheer range of space and time in relation to which human can meaningfully act. Culture, history, tradition, massive cooperative projects, all mean that human behavior is symbolically set into contexts of varying ranges and scopes. (It is worth pointing out, parenthetically, that some modern folks, in the name of reductionist science, have even managed to talk themselves out of any sense of freedom or agency by symbolically placing all events within the context of a wholly deterministic cosmos whose fate, down to the tiniest detail, was sealed at the “big bang.”)

Another way to think about the openness of human communication systems is to reflect upon the prolonged maturation period required for human development. Humans are slow to maturity and require cultural forms to solidify their organismic flexibility and plasticity; they need socio-historical order and structure where basic instinctive drives have atrophied (also see Becker, 1971). As von Bertalanffy well recognized, humans find themselves located within a third sphere, a symbolic dimension atop and amidst the inanimate and the organic (cf. von Bertalanffy, 1967). Johann Gottfried Herder’s *Essay on the Origin of Language* offers much on this issue. Herder, philosophically clearing the ground for Jakob von Uexkull’s biological work on the “*umwelt*,” explores how each organism lives in its own sphere of concerns and involvements. He further claims that “the narrower the sphere of an animal, the less its need for language” (p. 105). His point is that language is most suited for, and symptomatic of, that organism most open to the world. Language, said otherwise, “fits” with the other kinds of openness that characterize the human being. Hence, it is not simply that language per se radically opens the human ranges of space and time, but that human beings—in their upright posture, articulate hand gestures, frontal cortex, in their unique sociality and in their capacity to make tools and to take up residence anywhere on the planet—were equally pre-set for language (cf. Dunbar, 1997; Herder, 1966; Jonas, 1966; Tallis, 2014).

Gregory Bateson’s work, especially his essay, “A Theory of Play and Fantasy” (1972), offers additional insights into the sources of the openness characterizing human communication systems (also cf. Bateson, 1956). He argues that deception, threat, histrionics, and other forms of metacommunicative framing can be found in mammalian interaction. Such activities are, he suggests, the evolutionary precursor and logical prerequisite for denotative propositions, i.e. human utterances bearing propositional content (also see Anton, 2003). Bateson (1965; 1972) identifies at least three different orders of complexity as we move from (1) organisms transforming event-data into information according to goal-seeking, to (2) the strategic uses of play, deception, and other multileveled forms of information mammals can manufacture in interaction, to (3) the possibilities of abstract concept-transfer within the uniquely human processes of producing, conveying, and understanding denotative propositions. Bateson furthermore nicely reveals the degree to which humans, compared to all other organisms, predominantly live in a world of fiction,



fantasy, speculation, and possibility, a world where people will die for their flag, a world where one of the main questions underlying the pursuit of love, money, and success, is: “*Is this play?*”

Robin Dunbar, in his *Grooming, Gossip and the Evolution of Language* (1997), also thoughtfully accounts for some of the openness within human communication systems. Documenting particular ways that humans (in social structure, physiology, neuroanatomy, etc.) are unique primates, Dunbar suggests that humans are most open to comprehending others’ views, and others’ views of their own views, and even others’ views of their own views of other’s views, etc. He discusses what is known as “Theory of Mind” (ToM) as theorized in developmental psychology and evolutionary biology. ToM roughly refers to awareness of belief states, in particular the ability recognize that others (or oneself) can have a false belief; it is learning how to give subjective status to beliefs, another’s or one’s own. For example, I can have a belief, and I also can have a belief about your belief. Indeed, I can have a belief about your belief about my belief about your belief about my belief, etc. He suggests that human children, at around age four to four and a half, learn that others have different views than themselves, begin to become more convincing liars, and can pass a “false-belief” test. Nevertheless, such complex capacities also entail countless interpretive demands and interpersonal challenges. Said simply, people are not always honest or frank with each other, and people do not always believe what others tell them. But, clearly, not all communication confusion or problems stem from distrust, foul intentions, or outright deception. For example, the first time a man cries in front of his wife (should such an event occur), on the first instance the wife may interpret the crying in different ways according to background, previous experience, and a host of contextual and interpretive factors (cf. Laing, Phillipson and Lee, 1966). Some women, because of their upbringing and their fathers, will “naturally” perceive men crying as weakness or something to be ashamed of, while some others might “naturally” perceive the crying as a sign of sensitivity. Some differences in interpretation come from cultural expectations and some come from individual differences. Ultimately, sometimes, in some contexts, there are simply too many cultural, sociological, and personal values and assumptions to determine an unequivocal “right” interpretation (Laing, 1970).

Another source of openness, and perhaps one of the most pernicious problems for any would-be algorithmic science of human communication, is that there seems no scientifically rigorous definition of “context” for any event or action of human communication (also see endnote #2). Any statement or symbolic act can be placed in contexts with varying circumferences or ranges of specificity and relevance (cf. Burke, 1966). The actual words making up this sentence, for example, are in this text, part of my argument, stated in English, published in this journal, located on the planet Earth, etc. Such ambiguous boundaries are not simply spatial. They are temporal, too, which means that in interpersonal squabbles and in international conflicts, (any dispute of the “No; you started it” variety), we find differences in how causal sequences can be “punctuated” and contextualized (cf. Watzlawick, Beavin, and Jackson, 1967).⁶

Natural languages, from a certain vantage, are cultural constraints regarding sound production. Phonetic literacy, too, fundamentally provides a set of constraints on how sounds are graphically represented. Such constraints, as forms of information, require a relatively small expenditure of energy but enable a massive storing and release of possible

⁶ This is not intended to deny the possibility of robustly theorizing context. Scholars such as Edward Hall (1966, 1976, 1983) and Dorothy Lee (1959, 1976) have contributed significantly to the overall understanding of context and its relation to social processes. They also have shown how cultural symbols, due to their growth and change in meaning with their participations in actual, particular situations, cannot be corralled into an algorithmic expression, at least not without underestimating the resources self-conscious individuals might bring to bear.



future work. Culture and language, vested into a uniquely configured body, therefore forms the ground upon which countless technological innovations can grow: literacy, clocks, mirrors, microscopes, telescopes, telegraphs, computers, and satellites. As McLuhan and Nevitt probe: humans are not only open to technological extensions; they themselves are “an extension of nature which remakes the nature which makes the humans” (cf. 1972, p. 66). But the rangy openness of human communication systems is only partly captured by the inventive ways that we harness, store, move, and strategically expend energy within various systems. It also refers to the growing capacity of people to manage the world at a distance through forms of technologies, to deal in abstractions and symbolically represented possibilities.

Language is, as just suggested, a system of constraints. It turns local emotionally-laden gesticulations and organismal sounds into an abstract and articulate intersubjective horizon of intelligibility. Part of Thayer’s argument, made at different places throughout his work, is that constraints are an inseparable part of what make information possible. Kauffman, Logan et al. (2007) have suggested that, actually, *the constraints are information*. We can well clarify this important point by turning to Kenneth Burke (1961, 1966) who argues that humans are socialized, primarily, by being drenched in a flood of “thou shalt nots.” The words “don’t” and “no” are indeed two expressions that children commonly hear, and these expressions become part of the symbolic resources that they (and adults) use for social and self-regulation. Indeed, as any parent can testify, children are well on the road to becoming independent and self-regulating minds when they can say, “No.” Burke, too, would agree that self-conscious (i.e. response-able) personhood does not really commence until children, in their own self-talk, can say “yes” or “no” to any of the “tribal thou-shalt-nots.” This inaugurates the uniquely human capacity to consider not merely what is the case, but rather, to become responsible for imagining what might be or could be or ought be. People therein gain (or are encumbered by) an internal communication systems regulator: *conscience*. Georg Gusdorf eloquently touches upon this issue when he writes, “the life of the mind ordinarily begins not with the acquisition of language, but with the revolt against language once it is acquired” (1965, p. 40).

The absolutely “wide open” character of human communication systems in the modern global world can be seen clearly by simply attending to the “world news.” If we try to soak it all in, from as many different angles, as many different outlets, channels, and stations as possible, we can’t avoid noticing how “the mass media” (and its consumers too) routinely take information out of context and re-contextualize it. The media also regularly present condensed and abstracted stories depicting people who themselves are acting on partial information and so on. What becomes overly apparent is that people have no obligation to tell the whole truth and nothing but the truth, nor are people obliged to understand, believe, or accept what others say. Moreover, people can deceive themselves, can have unexpressed doubts or second thoughts, and can have new insights regarding old issues. They also can (and often do) change their minds. How else might one explain all the strife, the distrust, the disagreement between political parties? Again, people not only unwittingly misunderstand each other but they purposefully take each other out of context. Values, beliefs, orientations, and assumptions, consciously as well as unconsciously, serve as contextualizing regulators. They operate within different communication systems to amplify, silence, promote, ignore, gainsay, advocate, counter-claim, and refute. The seeds for such wild complexity and differentiation were sown all the way back in our mammalian history, in our capacity to imagine, play, pretend, and deceive.

As one final illustration of how radically open are human communication systems, consider the expression itself, “open and closed systems.” Such “*freely created*”



metaphorical expressions can be “cashed in on” and serve as negative entropy (rather than noise) only for those who can recognize the many patterns to which such terms refer. This point is underscored elsewhere where von Bertalanffy observes, “there is no *biologically enforced connection between the symbol and the thing signified*” (1966, p. 16). Note, moreover, that von Bertalanffy, aligning with neo-Kantians such as Cassirer and Whorf, recognizes how culturally relative conceptual categories overlay and infuse the species specific biological categories of perception (cf. 1980, pp. 232-248). High-level abstractions are symptomatic of the very openness that characterizes human communication systems. They refer not simply to pattern-recognition in the sensory environment but to meta-level conceptualization of pattern-recognizing itself. Such scientific terminology, along with the scientific enterprise, offers obvious examples of the peculiar kinds of openness that characterize human communication systems. This also means that although humans, like all living organisms, are open systems, we still can theorize, if only metaphorically, how human communication systems range in their own regard, at different levels of analysis, from being closed to being open.

1.2.2 Tensions and Balancing Acts

One can conceptually place systems of any size and any sort along a continuum from totally closed to totally open, and yet, in reality and actual practice, every human communication system has some degree of being open or of being closed. An example of a closed system might be an air traffic control system (or perhaps an Amish community). But “noise” such as static or interference somewhat “opens” the system (in the Amish community, news from the outside can enter). Also, human users can mishear and/or misinterpret what was said, which adds to the system’s openness as does the fact that human air controllers are open to error (and, some people, for whatever reason, choose to leave an Amish community). On the other hand, a casual conversation between friends of nearly equal social status might be depicted as more on the “open” side of the continuum, but, then again, either person in the conversation might be operating by a hidden agenda that serves to “close” that system. Additionally, social protocols and rules of cultural etiquette also contribute to keeping a communication system more closed.

Only in theory and in approximation, therefore, can we maintain a strict division between open systems and closed ones, especially once we consider the degree to which modern individuals use technological extensions in the forms of information possessing and data handling systems. In everyday life, all said, there are no “pure” examples of either open or closed systems, but we might still offer up the continuum and place a written checklist interview for a government accounting job (or mass standardized tests) on the “closed” end of the spectrum. On the other end of the spectrum, we might place a loose dialogue between peers where they willingly discuss issues without having any advance sense of where it or they will end up (or, perhaps, open source software coupled with 3D printing).

Human communication systems, perhaps not surprisingly, are beleaguered by problems of relevance partly because of sheer openness, but also partly because people handle so many different choices of context as they attempt to digest the information that others provide. “Information,” already suggested, serves as negative entropy only for those people who are able to use that information to generate order within their lives. The more that people consume “information” they either cannot or will not put into a context of



meaningful action, the more powerless they will experience themselves to be. In today's modern heterogeneous and global cultures, irrelevance is an ever-growing threat.⁷

We can summarize this theme by identifying the tension that often needs to be balanced within human communication systems. The system "must be 'open' if it is to be adaptive and viable, yet it must be 'closed' in order to be organized, predictable, and efficient" (Thayer, 1987, p. 83). Thayer clarifies even further where he writes,

In both cases (closed and open systems), information and action mutually inform each other. In the one case, there needs to be an action that justifies and rationalizes the existence of certain prior and accessible information. In the other, certain information needs to be generated which will justify and rationalize the action...In a closed system, we attempt to design out "error." In an open system, we would attempt to design in some kind of possibility of optimum "error." We know how to think fairly well about closed systems. We do not know how to think very well about open systems. (1997, p. 61)

As I have been trying to make clear, Thayer's work somewhat began by emphasizing how human systems are different, and he then turned to how innovation and creative work can be maximized within human systems (1968; 1987). His later work moves toward addressing some of the problems that occur within systems that remain too open, particularly problems of leadership within organizations and contemporary US culture more generally (cf. Thayer, 1986; 2007). Most recently, he has theorized the generation of motives (i.e. system constraints) within overly open human communication systems (2011). To help make this somewhat subtle transition more evident, I need make some final remarks about the basic differences between open and closed human communication systems.

"By far the best place to gain a superior concept of 'systems,'" Thayer suggests, "is by looking at how questions and answers create social order" (2009, p. 171). Whereas a question opens discussion by implying further possibilities, an answer closes it and/or shuts it down. This is not to deny that some persons in some situations can find some answers to open additional questions. The more important theoretical point is that there is a significant difference between questioning and answering. Closed systems basically set conditions for fulfillment of objectives in advance; they cannot re-establish along the way new norms or baselines for steady states. To use Richard Lanigan's (1992) terms, they construct "contexts of choice" so that once a selection is made from available options, "data" is *given* as meaningful information. "Multiple-choice" tests and/or "True/False" tests exemplify this principle as does word selection within sentence construction. Human communication systems, even if incorporating contexts of choice and other information theoretic models, can function in significant contrast to this; they can question and/or change the scope and range of options available.⁸ They enable making up new recipes rather than simply following out already established ones. Take the case of individuals walking into a library. Instead of

7 This is not to say that all forms of "relevance" are therefore beneficial to all parties involved. In fact, part of the point of understanding that systems are embedded within other systems is that once larger "dysfunctional" systems are in place, incompetence in one place can become highly "functional" elsewhere. One of Thayer's (1975) essays, "The Functions of Incompetence," examines how personal irresponsibility and incompetence in various domains can play out quite "beneficially" within larger social and economic systems.

8 The science of "communicology" admonishes that scholars exercise much caution when entering into discussions based in "either/or" oppositions. For example, sometimes, in response to some bit of "either/or" thinking, someone will try to transcend the discussion and move it along by advocating that people recognize the fact of "both/and." In this way, "both/and" can get set, somewhat ironically, in opposition to "either/or," which, unfortunately, amounts to a subtle reinscription of "either/or" thinking. One of Richard Lanigan's (1992) contributions, drawing largely upon Anthony Wilden's work, is to have developed "a binary/analog logic." He thus maintains we need not reduce our modes of thinking to either ("either/or") or ("both/and"), we, quite to the contrary, find ample space for both ("both/and") and ("either/or"). Here, then, the "either/or" categories operative within information theory are integrated into, and can be handled as a subset of, communication theory.



asking if it has a certain book, (a closed system), they wander through the aisles looking for something to spark their interest and maybe re-direct their trajectory. Here we find what Lanigan (1992) would call a “choice of context,” which deals in “capta,” or what is *taken* as meaningful information. “Capta” aligns with loosely structured essay exams, or to those particular kind of “True/False” tests Thayer used in class, where respondents also have the opportunity to address in detail *why* they marked “true” or “false” for each or any question.

Another robust challenge to handling concrete problems posed within human communication systems may be that every conversation is historically embedded within countless non-repeatable wholes. In addition, the organization and functionality of part-whole relations change considerably as we move from the closed to the open side of the spectrum. In closed systems, one chiefly has what could be called pieces that “interact” with other pieces in dependent hierarchies, whereas, in open systems, the parts can be seen as moments that “transact” with other moments in part-to-whole hierarchies that are subject to re-contextualization and reversals (also cf. Wilden, 1972). In a word, the basic meaning of the G.S.T. term “interdependence” changes; it drifts from meaning “interactions” to meaning “transactions” as one moves from the closed to the open end of the spectrum (also cf. Dewey and Bentley, 1949). Theorizing the role data and information play within human communication systems can remain exceptionally ambiguous, especially due to the implied transitions and translations between interlocking open and closed systems at different levels of analysis. At the very least, we hopefully can agree with Thayer that “To export a concept of information that fits a closed system to what are essentially open systems is to let what we know get in the way of what we want to know. What we want to know is how the social future gets created, not how the physical past or present gets described” (1997, p. 56).

1.3 “Information” within Human Communication Systems

Few concepts are more slippery and more troublesome than “information” (also see Tallis, 2004). Often the referent is not obvious. Is someone referring to environmental data or humanly created information?; to a closed or an open system?; to mechanical and electrical processes or human symbolic action? Because systems are embedded within other systems, and because the word “information” intelligibly operates across different systems at different levels of analysis and in different contexts, some confusion may be inevitable.

Alphabetic literacy, magnified by the printing press and by the telegraph, can quite easily be identified as the original culprits in promoting the idea of context-free discourse or disembodied information (cf. McLuhan, 2003; Ong, 1982). Well beyond the scope of the present essay would be to review all the ways that the wholly oral noetic economy has been revolutionized by literacy (cf. Havelock, 1963; Olson, 1994; Ong, 1982). For present purposes, we can suggest that alphabetic literacy, very roughly and loosely depicted, serves to secularize, detribalize, and individuate (also see Anton, 2010, 2011). It alters relations of knowledge, power, and authority by radically changing the demands and expenditures of cognitive resources. It lightens burdens for certain kinds of internal memory and thereby alleviates reliance upon rhyme, rhythm, and alliteration. It reduces fears of forgetfulness just as it increases tolerance for novel ideas. But, as Thayer points out, it is also a contributor to the conceptual quandaries we now find ourselves in regarding data, information, and communication. He writes,

In secularizing the process [communication] and conceiving of it as strategy and tactics to be deployed as means to secular and rational ends, the later Greeks also ‘de-epistemologized’ [sic] the idea of communication. It therefore became possible to think of ‘knowledge’ or ‘information’ as a meaningful entity, substance, or commodity



sui generis, as having legitimate human pertinence regardless of the 'knower.' Thus 'knowledge' became transcendent, and people became substitutable in the process. (1987, p. 224)

His point, I believe, is that once literacy enables people to imagine knowledge separable from particular individuals, people also can conflate knowledge with information, and the latter can even be theorized as a meaningful commodity independent of context, persons, and their goals. Perhaps obviously, countless conceptual muddles and practical problems stem from these kinds of confluences, not the least of which is that many people continue to produce and distribute more "context-free information" than will be (or could be) meaningfully digested and used. They overstuff airwaves and fill up computer drives with absolutely everything imaginable. Nothing is unrecorded, unamplified, unfiltered, or non-remediated: bloopers, cat videos, out-takes, vacations, pictures of food, celebrity photos, and gossip galore. Also and highly related, many people today want recipes for life yet seem not to notice how recipes require substitutable ingredients. "Presumably a military commander whose record is more distinguished than that of others has some superior way of acquiring or screening or using information," Thayer writes. "This was reportedly Franklin Roosevelt's genius. But it does not follow from this that if you gave someone else the same information, that person would behave in an equally superior or distinguished fashion" (1997, p. 59). In many situations and contexts, many more than we seem to want to admit, the nonsubstitutability of individuals is precisely the point.

No two human beings are communicatively interchangeable. In fact, individuals at one given time and location are not even substitutable with themselves at a different time and/or location. Even persons who have been placed in physical isolation remain burdened with an intersubjective self-understanding that grows, evolves, and is never to be repeated exactly (also see Anton, 2008). Summarizing how these facts bear upon both the differences between scientific "laws" and historical "laws" as well as the differences between physical data systems, information systems, and human communication systems, Thayer states that,

The chemist can combine and recombine his elements into further recombinable compounds. Not so the student of communication. Like Humpty Dumpty, the pieces cannot be put back together again. For the most part, the elements are not interchangeable, the sets are not identical, and the "elements" are not reconstitutable at another time, another place. In fact, interpersonal, multipersonal, and group relationships depend upon nonsubstitutability. For example, in the eyes of those who witness "him," the same words from the mouth of another person would not be Ronald Reagan; what A says to B about C is not what A says to C about C; the Gettysburg address 'in other words' is not the same thing; a film seen the second time or with a different set of people is not the same experience; the behavior of demonstrative football or soccer fans would not make the "sense" it does if there were not a contest in progress to which they were witness—and so on. In communication, neither 'causes' nor 'effects' are additive, since the one is defined by the other in more or less unique, irreversible, and nonrepeatable ways. (1987, p. 225)

From Thayer's vantage, a G.S.T. orientation to human communication must at the very least take-into-account: "when, where, and how, who says what to whom in front of whom," just as it must concern: "who listens to whom (and who doesn't)," as well as "who heard who say what to whom," or even, "who imagined who should (or should not) have said what to whom." Each and all of these taken together vitally matter and ultimately contribute to making any communication event the non-reproducible whole that it is. In human



communication systems, therefore, an interpersonal encounter can go wrong by using “the right information” but having it sent by the wrong person, or to the wrong person, or even at the wrong time. As Thayer observes, “Information overload’ in the ‘Information Theory’ sense is a matter of quantity. Between spouses it may be a sheer matter of timing; there are times when a single word may be too much” (1987, p. 99). This also implies that, “We can design and build information-decision systems only by assuming that certain information is given, and that the users are interchangeable...And [yet] the information that appears to be given—or ‘self-evident’—for those who are interchangeable is likely to be differently interpreted by those who are not” (Thayer, 1997, p. 62). Because so many people imagine that communication is merely an act of “transmitting information” to one another, they also seem to imagine that by simply improving their messages, perhaps giving people more information and quicker access to it, all their communication problems can be solved. But, alas, a word to the wise remains insufficient if the people involved are not wise. “Answers to questions you can’t raise,” Thayer rightly argues, “will be ‘knowledge’ you can’t use.” This is perhaps one of the central problems of the information age.

Too many people, from the most educated to the least, have come to believe that data or information in the abstract (or at least *more* of it) will be a kind of savior or an overall benefit. Whether acknowledging it or not, they seem to want information (perhaps “big data”) to shoulder the burden of decision-making and to alleviate the weight of moral responsibility. They have yet to come to terms with the simple but challenging question: “How does information ‘inform’?” (cf. Thayer, 1997, pp. 51-62). At a minimum, giving people quicker access to more information does not help them if they are incompetent. It may even exacerbate their problems. It also will not help those who remain without goals and genuine aspirations. Only from within the larger systems of relations with others, from imagination and from meaningful goals, can information become relevant, vital, and actually informative.

Thayer sometimes would say in class, “What we can know is constrained and enabled by our purposes for knowing.” Consider, for example, two students sitting next to each other in a university history class. One is in class because she wants to be a visionary—a future leader and public intellectual—someone who will make vital contributions however sweeping and global or modest and local. The other student is largely goalless and indifferent, present in class because she remained unable to convince her parents not to send her off to school. Who cannot see that these two individuals will “get” different information from the course? In fact, without radically re-orientating her reason for being in school and without clearly articulating her goals, the second student might be wasting a lot of time and money. People who genuinely want to know things for life and are on a mission to *cultivate themselves*—set on growing not in “the ‘amount’ of information they ‘have’” but in their very information-handing capacities—will be able to know things in ways that those who are idly drifting through life simply cannot.

1.4 Goals and Aspirations as Part of System Vitality

Recalling von Bertalanffy’s claims that symbols facilitate “purposive behavior” as well as enable “symbolic trial and error,” a few more words should be said regarding the vital role that goals, plans, and aspirations play within human communication systems. These form the ultimate and perennial ‘choices of context,’ without which all the information in the world will not help. Bereft of goals and plans, without a vision of where to go and who to become, people are at a loss. They are tumbleweeds, ping-pong balls on water, an advertiser’s dream.



One of the challenges people face in understanding human communication (and themselves more generally) is that common sense invites them to conceive of themselves as static entities rather than as open and evolving systems. This was partly why von Bertalanffy's needed to argue against those who imagined that a physical "closed-system account" would suffice for human beings. People do quite easily seem to take themselves as basically visible things in space, and, if they do, they may struggle to grasp how possible futures symbolically represented could be part of what gives their lives structure and composition. But, as Thayer instructively maintains, actual working goals, *not already secured accomplishments*, are essential. They often are what give the most energy and definition to human lives (see Thayer, 1988; de Saint-Exupery, 1950).

Thayer, like many great professors, sometimes would ask students what they want to be when they grow up. He would suggest, echoing Allen Wheelis, that "we do not know who we are until we know who we ought to be." Occasionally a student would retort "but I don't know who I ought to be!" Thayer would give two responses that usually left students reeling. One was, "Are you saying that you don't even know what kind of a person you *don't* want to be? That you don't even know where you *don't* want to end up?" The other was, "If you don't know what you want to be when you grow up, then you must do absolutely everything assigned to you as best as you can, giving it your full attention until your aspirations become clear to you." His point, I think, was that people commonly claim that they do not know what they want to be when they grow up but then also simultaneously excuse their dereliction from some duty or assignment by suggesting that it is likely irrelevant. This is a way of wanting it both ways, and it hopefully shows how systems that are "too open" easily flounder.

The functioning of any system depends upon what, exactly, is to be excluded. This is as true for carburetors, engines, and mechanical systems of all sorts as it is for cell walls, membranes, and living organisms more generally. Within human communication systems, what Thayer terms, "*excommunication*," also plays a crucial role. In practice, this means that what one avoids taking-into-account can be as functional as the data or information one accesses. Here we also can benefit from considering Thayer's distinction between "teleological" and "telesitic" behavior. He argues that although all living systems can be described as in the process of becoming what they are, we need another term for what humans can do, even if we have no more evidence for this capacity than what a few humans have achieved. The actual term, "telesitic," he admits, "is not entirely satisfactory, but we need some concept to account for the fact that people, unlike their fellow creatures, can undertake to become (socially, psychologically, etc.) what they *are not*" (1987, p. 101). His point is that modern human beings, because of their capacity for self-relation, for self-conscious reflection, for literate and other modes of technological extension, are more than merely in the processes of organic teleology. Some individuals, by symbolically considering possible or likely states-of-affairs, may elect to engage in a morphogenic process of becoming what they are *not*. The important theoretical point for anyone genuinely concerned with human communication is that:

...it is only when an individual's self-defined ends are both completable [sic] and fully determinate that his communication systems can be completely described; the extent to which they are not fully describable is the extent to which his communication systems are open. The fact that people talk to themselves about their telesitic ends is in most cases sufficient to ensure dimensions of indeterminate self-organization. (Thayer, 1987, p. 77)



“Telesitic” behavior could be anything from becoming literate, to learning a foreign tongue, to learning to juggle or play a musical instrument, to learning calculus or how to play billiards or chess.⁹ It could be completely changing one’s diet (going vegan), one’s religion, or, even changing one’s sex. It is this “telesitic” characteristic, coupled with capacities of self-talk, that partly makes human communication so creative but also so unpredictable as far as an algorithmic science goes.

Sometimes in class, when Thayer wanted to explain how constraints make communication and forms of freedom possible, he would suggest that too many people only understand “freedom from” but not “freedom to.” They seem to think of being “free from constraint” x, y or z, rather than being “free to do” x, y or z. It might help to carefully reflect on the sheer ambiguity of the expression, “Freedom from constraints.” Most people seem to imagine that the expression means, “freedom coming by someone being *without* constraints” whereas, in most cases, actual freedom, the living agency that we experience, amounts to “freedom that emerges *by way of* constraints.” Constraints, limits, rules, structure, all are the very life-blood of freedom, agency, and decision-making. In practical application, we as undergraduates were taught to use Ross Ashby’s “law of requisite variety” as a rule for managing one’s overall life enterprise (i.e. the sum total of one’s communication systems). Thayer admonished students to read deeply and widely across many disciplines and fields, and he suggested that people should move from one canonical thinker (or great mind) to the next, opening to as many traditions as possible. He wanted students to see for themselves that only variety can handle variety, that any system regulator must maximize internal variety if it is to effectively handle a wide range of contingencies, and that any system would need to approximately match (or preferably surpass) the complexity of the system it would attempt to regulate. But, obviously, this is not to suggest that increasing the sheer amount of data or information could ever be a panacea.

Anyone who has thought about innovation, decision-making, and their relation to information within the human communication realm has probably encountered what Barry Schwartz has called, “the paradox of choice.” Stated most simply, people’s confidence and satisfaction in decision-making are often inversely correlated to the amount of information and/or choices they have regarding those decisions. Hence, some people (more than a few) have attempted certain tasks only because of what they did *not* know, because of information they did *not* have. For this reason, Thayer advocates that, “We have to understand information both ways—both in terms of what can be done with it and what can be done without it...Almost by definition, the most successful entrepreneurs are those who either ignore, or remain ignorant of, the odds and the best advice they could get” (Thayer, 1997, pp. 56-60). High performance people seem to have learned the “unspeakable truth” of adaptive resourcefulness and of silent competent action. And, in subtle and disguised ways, this is the G.S.T. point regarding “equifinality.” Some people have learned how to “make things happen” partly in response to the often-bogus promise of “powerful” information. It is captured in many well-known expressions: “talk does not cook rice”; “no one can talk themselves out of something they have behaved themselves into,” and, “an educated horse doesn’t run any faster.” Thayer not only expresses his criticism of those who would boil

9 A metaphorical difference between closed systems and open systems can be illustrated provocatively by comparing chess to billiards. Chess is often spoken about as highly demanding and as holding an astronomically large number of possible arrangements and moves. Point well taken, but it remains a highly “closed system” compared with billiards. When one takes into account the number of varieties of arrangements for the balls, and all the possible kinds of “shots” (massé, jump, bank, double bank, triple bank, etc), one not only finds a much more open system but we can see why a computer could beat a human at chess well before one will beat a human at billiards. This should be interesting to people given that billiards operates in and through laws of motion and gravity, whereas chess remains more symbolic. Unlike billiards, chess is defined by a set of abstract rules that can be digitized, and hence, chess is less governed by the physical properties of the pieces per se.



communication down to either the basic source of our ills or the long awaited cure-all, he also redistributes moral weight where it ought to be:

Communication is neither bane nor boon...if what one has to say and the other agrees to diminishes the humanity of both, it is not to the quality of the communication that one should turn for the cause. It is to the quality of the uses to which people put themselves and each other in their communication. The proper study of communication begins and ends in what people imagine they are for, not in what they imagine communication is for. (1987, p. 124)

His point is that we cannot realistically expect our communication models or information devices to be any better than we ourselves are in character, integrity, heart and spirit. We cannot blame “communication” if people do not know what they want to be when they grow up or if they refuse to take responsibility for their own humanity.

1.5 Explanation as Motive

Individuals’ interpretations, judgments, and assessments are the primary “drivers” of human communication systems. This means people do what they do for *reasons* and *motives* “pulling” from the future as much as they do what they do because of *forces* and *causes* “pushing” from the past. People commonly use, as I. A. Richard’s would say, “feedforward.”

Some of Thayer’s most recent work documents the decisive role that explanations play in functionally “closing” systems that otherwise would remain too open. Not only does he propose that explanations shape motives and structure social organization (1997, pp. 137-144; also see 2011), he furthermore details human action as unfolding in accordance with three general kinds of explanatory motives (or “open system constraints”). First, people do whatever is self-explanatory. Second, if they would deviate from self-explanatory norms, they will need to offer (or have ready) an acceptable explanation. Third, people do not do what they could not under any circumstance explain.

The first and primary kind of motive (or kind of constraint) is the most unnoticed. Those ways of “being, doing, knowing, saying, and having” that are dominant or pervasive within a culture or subgroup remain, basically, “self-explanatory.” This means that these are legitimated, sanctioned, perhaps even called for. In a word, they are highly likely to occur; they serve as their own positive feedback loop. Almost everyone has heard the expression, “When in Rome, do as the Romans do.” This point can hardly be overemphasized. Dietary practices, marital and sexual practices, beliefs and opinions, countless daily, weekly, and monthly rituals are self-legitimizing primarily because they have been done and continue to be done. Traditions and customs bear weight and have inertia, and so, many things come to be the way they are because they got to be that way (cf. Thayer, 1997).

The second form of motive (or open system constraint) appears when a person would deviate, for whatever reason, from the self-explanatory norms within a group or culture. In order to retain membership within the collective as a member in good standing, any errant act or belief will need to be contextualized through an “acceptable explanation.” An explanation, *a socially acceptable one*, thus serves as a motive for otherwise unacceptable ways of being, doing, knowing, saying or having. For example, if some young people do not do any drugs, they tend to hang out with other young people who also do not do any drugs. If, on the other hand, people do happen to do any drugs, they are likely to associate with others who also do the same drugs. Were it otherwise, the members of each group would likely feel an awkward demand to explain themselves. When people use the well-known expression, “peer pressure,” this is the main dynamic in operation. The theoretically



important point is that a given behavior, per se, is not acceptable or unacceptable, but rather, it is the explanation of it that becomes accepted or not. The truth of the matter can be less relevant, functional, or acceptable than a workable explanation. This means that a young person might be able to retain membership in his or her subgroup by explaining away an act of drinking (or an act of *not* drinking, as the case may be). But the explanation need not be true in some ultimate sense, merely one that others will accept. Note also, that, according to Thayer, “Whatever explanations or ‘excuses’ you accept from others are the ones you will get—from others or from yourself” (1997, p. 142). Consider this example: a young man explains to his new girlfriend how primates are not naturally monogamous. When the boyfriend (or girlfriend) eventually is unfaithful, neither party should be all that surprised. Rather than merely sharing information regarding the mating habits of primates (no matter how “true” that might be), the man wittingly or unwittingly may have been structuring workable motives or excuses for later actions.

Third and finally, a most basic motive within human communication systems (or open system constraint) is that people avoid any way of being, doing, knowing, saying, and having that they cannot possibly explain. To grab hold of what is explainable is largely to grab hold of what people think of as possible. Parents, for example, cannot counter prevailing cultural fashions by holding their children down, by locking them up, nor by physically accompanying them at all points to ensure that they do as they have been told. The nearest thing they can do is to fully grab hold of possible explanations. Imagine parents who say to their children, “Everyone drinks and drives now and again, even though they probably shouldn’t. So, be careful now.” Compare that to one who exclaims, “Under no circumstance will I ever understand you driving drunk. I don’t care the reason, ever! You call, stay at friends, have someone else drive, get a cab, something, but don’t ever get behind the wheel of a car if you’ve been drinking. I will disown you.” Such extreme statements may not work in all cases, but, short of installing a breathalyzer into the car ignition, they provide as much constraint as a parent will be able to muster.

2 Conclusion

This relatively brief overview of Lee Thayer’s G.S.T. orientation to human communication has outlined some of the main differences between closed and open systems and tried to clarify how the radical “openness” of human communication systems offers both opportunities and challenges. Few topics are more relevant or more broadly applicable than those that allow us to understand ourselves, call ourselves into question, extend and grow ourselves, and, ultimately, help shape our individual and collective destinies.

There is, though, much sad truth regarding the imaginative and fanciful animal known as the human being. Nietzsche well recognized this when he observed that any animal that could aspire to becoming better than it is must pay the price by thereby also becoming able to be a hypocrite. To paraphrase Robert Browning, “Our reach well exceeds our grasp,” and so, many people can harbor grand aspirations yet remain at a loss regarding how to get their act together. They want to do great things with their lives and even for the benefit of the world, but they struggle with the self-discipline needed to achieve even small successes. They yearn for greatness but are easily bogged down with too much freedom, too little genuine necessity. Moreover, modern literate individuals are not only significantly opened to the future, they are fundamentally mired in deep forms of self-relation. They can struggle with (but also make strategies regarding) the kinds of excuses they give to and receive from themselves.



In outlining the logic of much motivation within human communication systems, Thayer thereby offers valuable resources. He has identified some of the ways that strategists and/or high-performance people work the logic of explanations to their own, and hopefully society's benefit. First, they learn to surround themselves with others who have high expectations for them, where excellence is the norm and is expected. Second, where they can't find those others or immediately get themselves into different collectives, they nurture the kinds of explanations that help them avoid trivializations or degradations within their current groups. Much of this demands that individuals choose their friends wisely, giving special attention to any particular other(s) with whom they might be better off without communication contact. People also can learn the virtuosity of how to explain their actions without causing offence to others. If they remain unable to leave their current groups, they may need to go about their business without talking too much about it. And, finally, people can learn to structure environmental and social situations that allow for little to no excuses. They can functionally try to close systems that are too open by simply disallowing certain kinds or types of explanations to occur.

Communication, one's own communication, can never be at arms-length. It is not wholly beyond the realm of science and some forms of prediction and control, but, on the other hand, it is just as much a form of praxis and a form of art. We live our lives in communication. Few areas of inquiry are more intimate. If it is at all the case that, "whatever we talk about says more about us than our topic talked about," then nowhere do we say more about ourselves than when we offer up our theories of human communication (cf., Thayer, 1987).

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