Chapter IV

Niklas Luhmann's Communicative Systems Theory Framework

With his concentrated formulations in *Ecological Communication* (1989), Luhmann deals with ecological communication far more directly than Bateson. In principle, that must make it easier to introduce his framework, especially given the additional facility his highly systematic approach to both writing and composing was supposed to impart. In reality, however, it is no less difficult introducing Luhmann in the current context because of the following factors: *One*, he has been no less lucky than was Bateson at having been "discovered" and had his general thought introduced by the excellent introducers to his individual books that have been translated into English.[1] *Two*, the temptation to introduce Luhmann's overall social theory, instead of focusing strictly on his theory of EC, is enormous: The temptation is only transformed into a treacherous pressure because of his systematic style of writing and conceptualization in which each one of his individual philosophical forays is to a great extent a *specific* replay of his overall philosophy. For example, his theory of EC is, in most ways, a tightly-designed and shortened *localization* of his larger philosophy of social systems. *Three*, and in relation to the above, it is also very tempting to introduce the history of systems theory as a whole (part of which I have done already in the earlier part of this essay), make a comprehensive gesture at placing Luhmann's particular interventions within it (constitutive of his overall systems philosophy), and then to place his theory of EC within the above two. And, *four*, Luhmann's work is highly self-referential, obtuse, abstract, and frightfully repetitive!

What follows below does not completely resolve the above technical difficulties of introducing—some of which translate, on the whole, into the age-old problem of detecting and managing avoidable detail. In lieu of a fool-proof resolution, I calibrate my response to the above challenges as under. As far as the existing introductions to Luhmann's books are concerned: I encourage the reader to read them on his or her own, whereas he or she is likely to find them both illuminating and intellectually challenging, but sometimes also about as abstruse as Luhmann's books themselves! Having read them closely and critically, I myself have chosen to use them rather restrictively in my own

portrayal below—and have done so partly in order to stick to the text of *Ecological Communication*, and partly because of their intellectually incestuous character and generally laudatory stance toward Luhmann. Secondly, I have chosen to focus as singularly as possible on *Ecological Communication*, with only occasional references to Luhmann's other works (even though the knowledge of the other works has certainly helped me in understanding the given treatise). Thirdly, I have chosen not so much as to introduce—Luhmann or even the aforementioned treatise—as to critically explicate his key concepts and their implications for the future of the discourse of EC.

Luhmann's central contribution lies in rendering EC as communication carried out by, and among, interdependent but functionally unique social sub-systems—each of whose operational identity rests upon how it distinguishes between *system* and *environment*. I would like to discuss below the overall development of Luhmann's core proposition under the following sub-headings (that also refer to the central concepts he develops as part of the proposition): (A) *System* and *Environment*; (B) *Change*; (C) *Resonance*; (D) Second-Order Cybernetics and Systemic Self-Reflexivity; (E) Functional Systems Differentiation; (F) Binary Coding and Programming; and, (G) EC as Communication Among Function Systems.

A.   *System* and *Environment*: A Communicative Differential

Luhmann's reflections on ecological communication followed his research into the social implications of ecological dangers.[2] The findings of that research appear to have convinced him to view *ecological danger* as the critical point of interaction between "society" and "nature" and as the manifestation of a primordial tension between the two. As if to extend the above idea, Luhmann founds his theory of EC by proposing to consider *society* as a "system," *nature* as its "environment," and *communication* as the social activity singularly responsible for defining the two correlatively and deciding their respective ingredients. As such, and in the simplest sense, his idea of ecological communication translates into social communication about "exposure to ecological dangers."[3]

In locating EC thusly, Luhmann ignores the level of organizations, focusing instead on "society"—"the most encompassing system of meaningful communication."[4]

He also has us understand EC strictly in terms of whether it is a communication that seeks systemic transformations—instead of whether it affects individual consciousness.[5] (Contrarily, unless an ecological danger finds a mention in social (meaning collective) communication, it cannot expect to cause any systemic transformations.) Expectedly, he also stresses that EC "is not a matter of blatantly objective facts," nor could it be divorced from the idea of "social resonance;"[6] and that *communication* itself "is an exclusively social operation."[7] Rejecting the older cybernetic model, he argues:

> On the level of this exclusively social mode of operation [ecological communication] there is neither input nor output. The environment can make itself noticed only by means of communicative irritations or disturbances, and then these have to react to themselves. Just as one's own lived-body cannot announce itself to consciousness through conscious channels but only through irritations, feelings of pressure, annoyance, pain, etc., that is, only in a way that can produce resonance for consciousness.[8]

In reference to systems theorists' penchant for unification, it seems pertinent to point out that, unlike Bateson, Luhmann is not out to find units of a universal holism connecting all sorts of entities—animate and inanimate. Instead, he accepts the "system" as one unity, "the environment" as another unity directly dependent on the former, and then trains his focus on the manner in which they correlate. That is because

> the theme of sociological investigation is not the system of society, but instead the *unity of the difference of the system of society and its environment* ... [whereas] difference is not only a means of separating but also, and above all, a means of reflecting the system by distinguishing it.[9]

While *ecological danger* plausibly inspired Luhmann to choose the system/environment distinction as the point of departure for his theory of EC, he had previously developed that distinction itself as an important pillar for his general theory of *social systems*. (He also credits Von Bertalanffy for having highlighted that distinction within systems theory for the first time.) For all that, it is useful to keep in mind here that the theory of EC appears within his overall philosophical framework as an offshoot (or subsystem) of the general theory of *social* systems: both of which hinge upon the

system/environment differential. However, Luhmann presents his general theory of social systems itself as a customized and, in many ways, updated subsystem of the general *systems* theory![10] Given the above complexities, let me briefly discuss how the system/environment relationship plays out within his theory of social systems, and then consider it specifically within the context of the theory of EC.

Luhmann argues that a (social) system can be viewed, on one level, as "a mere collection of relations among elements"[11]—whereas "cinderblocks, beams, nails, and so forth" combine to form a house[12]—and, on another level, as a collection of sub-systems—whereas the same house would be understood as an aggregate of "rooms," for instance.[13] For the former level, he articulates a theory of *system complexity*—regarding how and why systems become complex internally through time; for the latter level, he develops a (complementary) theory of *system differentiation*—regarding how systems distinguish among themselves in order to secure an identity for themselves within the environment (*or*, how *system* distinguishes itself from *environment*). Both the theories—in liaison with a number of other concepts, including, for example, *evolution*, *autopoiesis*, *communication*, and *temporality*—contribute to the theory of social systems.

The theory of social systems renders society in terms of self-referential systems, maintaining that "systems can differentiate only...insofar as...they refer to themselves...in constituting their elements and their elemental operations."[14] However, "self-referential closure" of a system from its environment is "possible only in an environment, only under ecological conditions," whereas

> systems must create and employ a description of themselves [and must] at least be able to use the difference between system and environment within themselves, for orientation and as a principle for creating information.[15]

As a self-referential system made of smaller self-referential (sub)systems, *society* is understood to function, and be explainable, on the basis of the system/environment differential. But, "[b]ecause it claims universal validity for everything that is a system, the theory [of social systems] also encompasses systems of analytic and epistemic behavior," and "therefore itself appears within the real world as one of its objects, among many others."[16]

In other words, the theory of social systems retains within it—presumably like any other social system must—the *self-objectifying* tendencies necessary for it to create for itself an identity of its own, and, hence, its environment as well. As such, Luhmann's premise acknowledges the necessity for, and capability of, an operational system to distinguish itself from, and compare itself with, fellow-systems based upon its own parameters; wherefore, "neither an exclusively self-referentially created system nor a system with an arbitrary environment can exist."[17] Furthermore, because the theory of social systems has the above features by virtue of being a self-referential theory of self-referential systems, it is also meant to take "charge of epistemology": i.e., it is (an) epistemology![18]

Clearly, Luhmann views *environment* as a "system-relative situation."[19] But, as an analytical mechanism, the system/environment differential itself is intended to replace the older schema of whole/parts,[20] and absorb (or automatically include) such specific *forms* of (inter)systemic differentia as: "segmentation;" "center/periphery;" "conforming/deviant;" hierarchy; and "functional differentiation."[21] In sum, Luhmann prioritizes the system/environment differential over all else because of its neutral applicability and categorical width as a concept. A corroboration of that choice is found in his argument that—presumably on the levels of both theory and actual social existence—

> the only forms of differentiation able to survive are those that can mobilize processes of deviation-amplification (positive feedback) to their own advantage and keep themselves from being leveled out again.[22]

As the preferred analytical schema, the system/environmental differential:
undercuts ontology by emphasizing *relations* based upon systemically *observed* unities of differences (rather than independent or autonomous identities of entities);[23]
downplays the role of (human or individual) consciousness by resorting to the premise that *environment*, not "'the subject',", serves as the "preconditions for the differentiation of social systems;"[24]
constitutes "elemental reproduction" on the universal scale and is part of "self-identification" for self-referential and autopoietic systems;[25]

contrasts from the input/output schema in that the latter reduces "communication to action;"[26]

encourages us to view *input* and *output* as merely "ordering perspectives" concerning "greatly reduced, punctualized environmental access"—and whose applicability is "relative to a system;"[27]

renders "collective action" as the systemic way—presumably on the part of humanity—to achieve position "in relation to the environment;"[28] and,

replaces the distinction between "closed" and "open" systems...by the question of how self-referential closure can create openness."[29]

On the broadest level, *differentiation* itself is the way through which *system* "acquires freedom and the autonomy of self-regulation" within *environment*—ironically—by developing an "indifference" to the latter.[30] Hence: *Differentiation* of a system increases *both* the "sensitivity to what has been determined (what is capable of being connected internally)" and "insensitivity to everything else."[31] In line with the above, *system* becomes both increasingly dependent on, and independent from, *environment* on account of its own peculiar efforts at differentiating itself from the latter. As such, *differentiation* both *"increases* complexity" and "enables new forms for *reducing* complexity."[32]

Another factor to keep in mind in connection with *differentiation* is that an intelligent system can "distinguish the systems in *its* environment from *their* environment," and thus dissolve "the basic given *unities* of its environment into *relations*."[33] For all that, "the unity of the environment is constituted by the system," and *the* environment "is only a negative correlate of the system."[34] Luhmann subdivides the constituted unity of the environment, once again, into the system/environment differential, whereas

> the environment appears to the system as differentiated into various
> system/environment perspectives, which reciprocally overlap and
> altogether represent the unity of the environment.[35]

Luhmann elaborates a great deal on the relationship between *system* and *environment*. Let me list the chief nuances of his sketch as under:

System and *environment* have an "asymmetrical" relationship:[36] i.e., they lack a "point-to-point correspondence."[37] (For, if there were a direct and complete correspondence between the two, there would be no difference between them.)

That asymmetry is rooted in the degree of "relative complexities" of *system* and *environment*, whereas a system is always less complex than its environment.[38] "Every system must maintain itself against the overwhelming complexity of its environment"[39] by taking recourse to "selection."[40]

A system compensates, while it can, "for its own inferior complexity by superior order"—whereas "any success, any permanence, any reproduction, [on its part], makes the environment of all other systems more complex."[41]

While systemic complexity is the ordering or simplifying response on the part of *system* to environmental complexity, it paradoxically leads to further systemic complexity. Moreover, because systemic complexity is at once an attempt to consolidate *system's* differential from *environment*, it "increases with an increase in differentiation or with a change in the form of differentiation."[42]

On the basis of the above premise, and on the evolutionary scale, "the complexity of the world—of its species and genuses, its system formation—emerges through the reduction of complexity and through the selective conditioning of this reduction."[43]

A complex system is "an interconnected collection of elements" in which it is impossible to connect all elements with all the rest of them "at any moment."[44] Wherefore, since "[c]omplex systems must adapt not only to their environment but also to their own complexity,"[45] the higher a system (gets), the more complex it is likely to be(come).[46]

Notably, "Ecology has to do with a complexity that is not a system because it is not regulated by a system/environment difference of its own."[47]

Increase in systemic complexity "does not mean that the system as a whole passes over from self-related to more strictly objectifying environmental differentiation."[48] Instead, an increased complexity typically means that "*both* possibilities"—of self-relation and objectification—avail themselves "simultaneously and/or alternatively" to a given system.[49] Hence, Luhmann points to the fact that contemporary (Western) societies, presumably the more complex than their ancient counterparts, continue to view humans

"as something special, above all other systems in its environment"—even though their scientific analysis, "itself a societal operation," has for long rejected that status for the humans.[50]

Systems *internalize* their system/environment complexity *as* their self-reference,[51] whereas "one can say that the system *totalizes itself* by referring to the environment and by leaving it underdetermined." And as such, "[t]he environment is simply 'everything else.'"[52]

From the general theory of social systems, the system/environment differential enters the realm of communication by virtue of the fact that "the system is accessible to itself only through communication."[53] Luhmann contextualizes the dynamics of communication within the theory of self-referential systems, which maintains that "systems can differentiate only...insofar as...they refer to themselves...in constituting their elements and their elemental operations."[54] However, "self-referential closure" of a system from its environment is "possible only in an environment, only under ecological conditions," whereas "systems must create and employ a description of themselves [and must] at least be able to use the difference between system and environment within themselves, for orientation and as a principle for creating information."[55]

Evidently, then, the tension between *system* and *environment* is not a matter only of geography; it is also the basis for the linguistic and operational meanings of the two terms within Luhmann's framework. Wherefore, an *ecological* tension—or, let's say, danger—is at once a *communicative* tension, and is merely indicative of the *difference* between the mutually distinctive, yet hopelessly co-dependent, identities of *system* and *environment*. That difference is "mediated exclusively by *meaning-constituted boundaries*"—possible only within the social realm—of which the "[t]erritorial boundaries" are but a "special case."[56] Hence, "relationship to the environment is *constitutive* in system formation,"[57] whereas *environment* "is...a presupposition for the system's identity, because identity is possible only by difference."[58]

The issue of boundary or territory is central to *differentiation*, and hence to systemic self-identity, -realization, -determination, -presentation, –simplification, -abstraction, -analysis, -functioning, -reproduction (or autopoiesis), and -organization. All these concepts are developed to excruciating extents in systems theory, and the

authors—including Luhmann—typically insist upon sharply distinguishing among them. In general, though, what underlies the above concepts—within Luhmann's framework—concerns how systems differentiate themselves from their environments, and from other systems and *their* environments, in order to perpetuate themselves. As such:

> A communicative social system arranges everything in its own communication as either internal or external and practices its own system/environment distinction as something universally valid, insofar as its own communication is concerned. But at the same time it presupposes, as a condition of possibility for this practice, that physical, chemical, organic, and psychic realities on their own levels ignore this difference [...][59]

While Luhmann insists upon a basic, however fluid, difference between *system* and *environment*, he does not reduce either of them to a monolithic or singular entity in its own right. Past their macrocosmic theoretical distinction, both *system* and *environment* remain highly contextual and local categories in that a given system may well be understood as *environment* by another system and vice versa. This is because "systems define their own boundaries" as "[they] differentiate themselves...thereby [constituting] the environment as whatever lies outside the boundary."[60] Accordingly:

> [T]he environment is not a system of its own, not even a unified effect. As the totality of external circumstances, it is whatever restricts the randomness of the morphogenesis of the system and exposes it to evolutionary selection. The 'unity' of the environment is nothing more than a correlate of the unity of the system since everything that is a unity for the system is defined by it as a unity.[61]

Against this qualified and contingent differential between "system" and "environment," *ecological communication* appears as the nonstop self-defining by *society* through its persistent demarcation from the natural world. In such a situation, "[i]f the environment is interpreted as a *resource*, then the system experiences contingency as *dependency*;" however, "[i]f it is interpreted as *information*, then the system experiences contingency as *uncertainty*."[62] Either way, "[t]he system limits its communication...to

what the environment prompts at any given time and manages in other respects by monotonously continuing well-known themes." [63] On the whole, Luhmann dubs "natural" world as a communicative produce of the social world that is nonetheless eternally open to change for the fact that society does not cling on to a particular view of what it is (not). As a corollary, the *social* world is also presumed to *evolve* by constantly developing newer images of itself in contrast from what it believes belongs to nature, and thereby regenerating the (idea of) environment.

The peculiarity of the interactive dynamics between *system* and *environment* within Luhmann's framework radically *socializes* older cybernetic claims regarding the role and nature of *information*. *Information* now appears rather definitively as a *social* construct—"a purely system-internal quality"—insofar as "system introduces its own distinctions and, with their help, grasps the states and events that appear to it as information."[64] Furthermore, in refusing to view *information* as the natural linking devices across the universe, Luhmann also denies the occurrence of any information transfer from the natural to the social world:

> There is no transference of information from the environment into the system. The environment remains what it is. At best, it contains data. Only systems can see the environment because this requires the seeing of other possibilities, the presence of a pattern of difference and the situating of items within this pattern as a 'this instead of that'. In the environment there is no 'instead of that', no 'this' as a selection out of other possibilities, i.e., neither a pattern of difference nor information.[65]

Instead of *transference*, Luhmann proposes the idea of selection of information by *system* through the employment of the system/environment schema (typically to overlap with the internal/external schema). Wherefore, by connecting "environmental phenomena according to perspectives it has chosen itself and to distinguish them from one another," *system* paradoxically asserts its (communicative) autonomy from *environment*:[66] Self-reference and internal differentiation thus join hands and produce *circularity* and *asymmetry* in the system/environment relationship, which only extends and perpetuates the system through the passage of *time*:

Every sub-system articulates the self-reference of the overall system. It cannot identify itself as a "part" without referring to the whole, and this reference is *circular*: it presupposes itself within the whole. At the same time, every subsystem articulates the totality, though as the difference between subsystems and their environments within the system; this articulation is *asymmetrical*, thus rich in consequences. Circularity and asymmetry mutually presuppose each other. In the practice of ongoing communicative self-production, a continual change of perspectives is required, and that is made possible because this practice consists in temporalized elements (events, actions).[67]

B. Conceptualizing *Change*: Evolution Redefined Against the Systems Theory

Luhmann retains a strong sense that in the interaction between *system* and *environment*, the former forms the core, the latter the limitless periphery. So, *evolution* takes on an additional meaning: It becomes the dual process through which *system* accepts specific entities or activities to be well-within its control or managerial reach and leaves the rest to be handled or shaped by "natural selection." Ecological communication thus appears as an articulated identification of what is more or less logically consistent with the system—and what is not, which is *environment*. The environment is alongside viewed as the disciplinary measure exerted upon the system from the outside in the form of "natural selection"—nonetheless as interpreted by the system only.

To the extent that Luhmann reframes *evolution* as an ultimately discursive process involving the articulation and enforcement of the system/environment differential, he concludes that the orthodox Darwinian notion of evolution is incapable of providing answers to the existence and mutability of any forms. How do forms—let's say *system* and *environment*—come into being? Why do they change? How are such changes to be identified? Queries such as these, though rarely raised per se by Luhmann, lie at the heart of his assertion that natural selection alone is insufficient to explain larger changes, and that "[t]he theory of evolution must therefore include systems theory in the explanation."[68]

Unlike Bateson, who zeroed in on the microcosmic aspects of information transfer through the gene in order to explain larger ecological changes in cybernetic or communicative terms, Luhmann consistently keeps close to the heart macrocosmic social aspects even while using important elements from the cybernetic approach generally. As Luhmann rejects "genetic adaptation" as the exemplar of communication (between *system* and *environment*), he also stands in contrast from Bateson's explanation of *existence* as "meaningful communication," which rested on the distinction between universalistic "constraints" and (positive) eventual probability. Luhmann also argues that while "[t]he system is both supported and disturbed by its environment," it is not "forced to adapt by the environment nor allowed to reproduce only through the best possible adaption."[69] Furthermore, he views these mishaps or society's frequent non-adherence to environmental or evolutionary optimization as "a result of evolution and at the same time a condition of further evolution."[70]

Clearly, Luhmann radically de-limits the concept of evolution by challenging conventional perceptions of its dynamics. No longer to be viewed as the chaste final outcome of a messy series of natural processes, evolution turns out necessarily to include all impurities as well as their tentative fall-outs. In line with the above, Luhmann reframes evolution as a process that, instead of leading to something outside of itself, can only perpetuate itself. This reflexive review undercuts *evolution's* status as a process powerful enough to alter the human sphere conclusively or radically; by extension, it also calls into question the image of evolution as a harsh, but ultimately benign or positive, force that shapes the course of growth by ridding nature of artificial mishaps.

Through the above qualification of evolution, Luhmann's retains his focus on ecological dangers, and challenges the conventional image of the social sphere *as the active ingredient encroaching upon the vast exteriority of nature*. Alternatively, he prepares us to view nature as a persistent force working on the human world—or whatever could be included within the social or civilized sphere—and thereby forcing it *to respond*. In this framework, an *ecological danger*, by virtue of being a dysfunctional or unworkable *social* response to the persistent activity of nature, serves as a proof that the social world is occasionally liable to by-pass adaptation altogether. In sum, adaptation fails to be a necessary element of evolution for Luhmann; contrarily, "the

exposure to ecological self-endangerment remains within the context of the possibilities of evolution."[71]

C. *Resonance*: When and How an Environmental Issue Becomes an Issue

While *system* and *environment* interact, they do so only because they have to. Luhmann belabours the point that each of these arrangements persists with its own autonomy, tending to perpetuate itself without regard for the other. Given this broad understanding, Luhmann introduces *resonance* to postulate the thesis that "systems can react to environmental events only in accordance with their own structures."[72] *Resonance* itself, however, refers to those exceptional conditions, states, or phases—such as ecological dangers—in which the system fails to continue to reproduce itself, which causing it to "reverberate" (or to take into its consideration aspects that had been alien to its internal operations, and hence had been considered "natural").[73]

Against this idea of resonance, *environment* comes off as "the total horizon of information processing that refers beyond the system," and as

> an internal premise for the system's own operations constituted within the system when the latter uses the difference of self-reference and other-reference (or "internal" and "external") to order its own operations.[74]

To be understood hereafter as the *system's* environment as a matter of inevitable course, the environment "has no boundaries nor needs any."[75] This is because the environment "[presents] itself as a horizon," and "is the system-internal correlate of all references that extend beyond the system."[76] Luhmann adds that "whenever necessary, any operation can push [the environment] back still further," because the "horizon always recedes when it is approached, but only in accordance with the system's own operations."[77] Therefore, *environment* "can never be pushed through or transcended because it is not a boundary," and it "accompanies every system operation when this refers to something outside the system."[78] Luhmann further details the character of the dependence of the environment on systemic (self)interpretation as follows:

> As a horizon, [the environment] is the possible object of intentions and communication; but only in so far as the system can present the

environment to itself as a unity—and this requires that it can differentiate itself as a unity from it.[79]

In sum, Luhmann establishes a relationship of discursive differential between the system and the environment. This raises a series of questions regarding how the environment could exist at all if the only way it makes sense is by being explained in terms of the system by the system itself. Put differently: What is the epistemological status of the environment—if claims about it can emanate only from, and end only in, the system? What is *environment* if claims about its existence can only serve the formal, epistemological, and existential needs of the system? Furthermore, how could one put one's faith in the idea of resonance and, by extension, in the environment and its good? Finally, what is the virtue of admitting that the environment is ultimately a communicative produce of the system?

D. Second-Order Cybernetics & Systemic Self-Reflexivity

Apprehending the above lines of inquiry, Luhmann writes about *system* not only in terms of how it observes *environment*, but also how it observes other *systems* in the process of their observations of *their* environments. By pluralizing the notions of both *system* and *environment* without giving up the system as the beginning and the end of all effective realities—including *environments*—Luhmann undercuts any first-order ontological claims about *environment* to be valid on their own. His rationale behind adopting a softer view of first-order claims is best expressed as under:

> If the starting-point were an 'objectively' given reality that, for the time being, was still full of surprises and unknown qualities then the only issue would be to improve science so that it could know the reality better. But then the relations of the other systems to their environment—for even within society there are many other systems—would not be grasped sufficiently. Even science would not be able to understand why with its 'better knowledge' it often finds no resonance within society because what it comes to know—its 'better' knowledge—would have no value at all as reality in the environment of other systems or is at best a scientific theory for them.[80]

Luhmann's suggestion, then, is that, in addition to the first-order ontological claims, one needs to observe the variety of "second-order" claims regularly made about the environment, even though—but especially because—the two may run cross-purposes. This is because the validity of cross-systemic claims about the environment lies precisely in their mutually competitive and complementary value—rather than in some analytical space outside the system.[81] As a way to help us accommodate conflicting cross-systemic claims over, and about, the environment—and to grasp why society finds it so difficult "to react to the exposure to ecological dangers despite, and even because of, its numerous function systems"—Luhmann recommends a "second-order cybernetics."[82]

Developing a "second-order cybernetics" essentially translates into improving specific systems—that are meant to observe the observing of other specific systems—such that they could accommodate and make sense of cross-systemic claims about the environment. Luhmann deems this critical in light of the fact that the "observing of observing is not disciplined enough by self-observation," and that "it appears as better knowledge [while actually being] only a particular kind of observing of its own environment."[83] Conceding that the modern society has already "opened up possibilities for observing and describing how its systems operate and under what conditions they observe their environment," he concludes that the "second-order cybernetics" stands to improve specific systems themselves (such as science, law, education) rather than continue to expand the "observations" across the board.[84]

In the final analysis, Luhmann renders recursive observation, or reflexivity, as the most valuable lesson learnt, on the whole, from the broader admission that "every operation and every observation has structural limitations."[85] For a system to improve its ecological communication would essentially mean—in Luhmann's terms—for it to become more aware of its own perception of the environment and the rationale behind it. Through self-disciplined observations of one's own system's as well as other systems' observations about the environment, individual social systems can hope to produce more sophisticated versions of the environment and environmental dangers. On the whole, society may make headways in encountering ecological dangers if it adopts the self-reflexive epistemological framework of second-order cybernetics: which accepts *system*

as a pluralistic structure and *environment* as its equally pluralistic communicative produce.

E. "Functional Systems Differentiations" as the Interpretive Framework for EC in Modernity

As I noted previously, Luhmann renders EC as a socially—or collectively—significant processing of communicative irritations caused by the environment. In analyzing how this processing differs from the traditional to modern societies, he argues that in the former ecological problems were understood and addressed "via a semantics of the sacred"—something he claims is unavailable to the latter. He also points out that modern societies are conditioned differently for a variety of reasons, including those related to the effects of "writing, alphabetizing and printing" on "cultural and religious semantics."[86] One of those effects includes the desire for, and possibility of, increasingly precise knowledges, wherefore "it is no longer possible to reconcile knowledge with motivation through mysteries and secrets."[87]

In addition to this change in the technology of expression, to put it in my words, Luhmann makes mention of the "change in the primary form of society's differentiation from the stratification of lineage, clans, and families to the differentiation of function systems."[88] The increased specialization and internal alienation has caused modern society to confront "the problems of integration, i.e., of the negligible resonance capacity among the subsystems of society as well as the relation of society to its environment."[89] In view of the above problems, Luhmann considers his framework of "functional systems-differentiation" most suited to interpreting how ecological communication works.

Given that modern society is differentiated into function systems—economic, scientific, technological, legal, and several others on different levels or grids—and that those function systems serve as *environments* for still other function systems, how does an ecological problem find the larger *social* resonance? Or, what possibly enables a problem to transcend the internalistic functional differentia and be understood as an ecological problem (rather than any other systemic problem)? Deeming this line of

inquiry vital to developing a sophisticated understanding of ecological communication, Luhmann proposes "binary coding" as the central structural principle of modern society.

F.   **Binary Coding and Programming: Two Central Ingredients of the Functional Systems-Differentiation Framework**

In many ways, binary coding was to have been Luhmann's master-key to ecological communication—and our key to Luhmann—since he had postulated the dichotomy between *environment* and *system* as the first step toward (comprehending) ecological communication. Moreover, the concurrently separatist and conjoining concept of *ecological danger*, which plays a pivotal definitional role in his thesis, also indicated his preoccupation with dichotomies. There are two subtle factors to keep in mind here. One, in spite of his apparent obsession with binaries and dichotomies, Luhmann does not believe that "society" is something that can be understood only in terms of the sum of all the function systems; and, two, this characterization of the modern society is not meant as a sigh of relief! The crux of the issue for Luhmann is: Given the (possibly lamentable) ways in which society "distances itself consciously from all function systems—either through protesting, moralizing or through a blurring of differentiation"—what possibilities exist for meaningful communication about the environment?[90] Or, how can one explore the possibilities of meaningful communication against the presence of "the communication of the streets," i.e., "communication that is not coordinated functionally or coordinated ambiguously"?[91]

Considering the so-called "street communication" essentially irrelevant, Luhmann focuses on *effective* communication—or communication facilitated by, through, and often among the function systems. Binary coding, or the dividing of a given reality into positive and negative values for the purpose of manipulation, is heretofore understood as the manner by which function systems define themselves vis-à-vis fellow systems in order to continue to exist and operate as evidently logical and valid. On the whole, then, Luhmann focuses on "the possibilities of the function systems"[92] realized by "steering communication through binary codes."[93] A binary code is the critical axis of a function system's functional standpoint. For example:

> [T]he legal system operates with a code of legal and illegal. The economy uses property and money to distinguish clearly between possession and non-possession so that long-term possibilities of the transfer of commodities and money can be organized and calculated, and politics is guided by the questions of power that accompany governmental authority and which are put to the vote using ideological codes like conservative versus progressive or restrictive versus expansive.[94]

Inasmuch as the code provides a function system with its raison d'être, it basically creates the universe for it; hence, "from the viewpoint of [the system's] specific function, [the code] claims universal validity and excludes further possibilities."[95] Additionally, binary coding helps a function system simplify reality, for

> [the] *unity* that would be unbearable in the form of a tautology (for example, legal is legal) or in the form of a paradox (one cannot legally maintain that one is legal) is replaced by a *difference* (in this example, the difference of legal and illegal).[96]

Coding also provides a basic irreproachability to the function system by allowing it to "to steer its operations" in the form of *programs* "that regulate the coordination of the operations to the positions and counter-positions of the code *without ever raising the question of the unity of the code itself*."[97] In this sense, the programs designate "the conditions under which the positive or negative value of a specific code can be ascribed to situations or events," and are directly linked to decision-making.[98]

The relationship of coding and programming is significant for Luhmann's framework

  as it indicates how an environmental problem gets to be addressed at all despite the impossibility of a threefold code "of the type true/false/environment."[99] This is because the programs, by providing particular contexts for the manipulation of code-values, make "the reappearance of the third value" a possibility.[100]

  because it tells us about how binary codes are operationalized on the field (as programs);[101]

  because it reveals how binary codes do not function in terms of strict preferences (such as "truth is better than falsity"—insofar as the falsification of a given physical theory has

a much higher value than the assertion of a simplistic truth such as "mice have tails"), but with reference to the *levels* on which they are operationalized through programming. In other words, code *values* are decided through the process of programming.[102]

   as it provides with the best measurement of *resonance*. This is because the code constructs, or comes to terms with, the outside—its environment—through the programs, and it is "through the *differentiation of coding and programming* [that] a system acquires the possibility of *operating as closed and open simultaneously*."[103] Hence, examining, characterizing, or theorizing the distance covered or created between a particular code and its program can serve as a modality for looking at environmentalism and environmental communication *outside* the conventional "metaphysico-moral conceptual framework."[104]

On the whole, then, Luhmann views modern society for its particular talent at the *rejection of redundancy* (or overlap) by dividing itself up into specialized function systems that must work according to their own binary codes, but in coordination with fellow function systems and their codes. Luhmann's portrayal of modern society in terms of this increasing function-systemic specialization—matched with the compulsion to coordinate—is intended to force us into thinking afresh about the actual dynamics of *resonance*. This is especially because

> social resonance as a whole is not merely the sum of the resonances of each of the specific function-systems. The subsystems are environments for one another. They can produce a process of resonating disturbances when one subsystem reacts to environmental changes and alters the social environment of the other subsystems.[105]

Perhaps the only stabilizing factor in Luhmann's model is that *resonance* is ultimately "structured…according to the general model of system and environment," whereas *system* and *environment* remain discursive categories rooted in social discourse in the final analysis.[106]

G. EC as Communication Among Function Systems

Based upon the above analysis one could safely deduce that in Luhmann's framework, EC stands for *communication among different function systems of modern*

society activated through their specific binary codes—involving, and almost unfailingly induced by, ecological dangers. Hence, the typical Luhmannian context for EC, or his peculiar methodology for framing EC, is invoked when

> the internal dynamics and sensitivity of function systems like politics, economy, science, or law are disturbed by environmental problems. Sometimes this happens directly as when resources dry up or catastrophes threaten. But it also occurs indirectly via socially mediated interdependencies when, for example, the economy is forced to react to legal precepts even if it would attain better results following its own ideas.[107]

Past this primary framework, it remains a matter of exercise and observation to identify the central function systems of modern society, their quintessential binary codes and programs, the possible or actual disturbances among them and, finally: the function systems' efforts at reconciling or negotiating those disturbances through *communication.* Accordingly, Luhmann dwells upon (the function systems of) economy, law, science, politics, religion, and education and details how their specific binary codes make sense of, or interact with, an ecological problem, whether their procedures are effective, and how important it might be to understand the function systems' binary codes and programs in order to have an ecological problem to "resonate" with the system (or society) as a whole. He points out that the binary coding of economy lies in the "[to] pay or not to pay" dilemma,[108] of law in the duality of "legal/illegal,"[109] of science in true/false,[110] of politics in government versus opposition,[111] of religion in immanence versus transcendence,[112] and of education in the selection criterion of "better or worse."[113] Luhmann stresses that an ecological issue has to play into the binary coding of these function systems in order to become intelligible to them, and that unless it plays into each one of these systems, it is unlikely to create effective resonance on the larger social scale.[114]

In concluding the above critical explication of his theory of ecological communication, I would like to make four brief observations on the distinctive features of Luhmann as a (systems) theorist of EC. *One,* by underlining the impossibility of communication outside the social realm, but especially by directing our attention to the

system/environment distinction as the primary grid of social meaning, he shrewdly departs from Laszlo's flawed distinction between "natural" versus "man-made" systems. *Two*, in putting a resolute emphasis on the systemic aspect of modernity, he also diverges from previous systems theories' sympathetic lip-service to the role and significance of the individual and their continued belief in individual consciousness. *Three*, especially via his conceptualization of the second-order cybernetics, he decisively consolidates the significance of meta- or second-order analysis within the tradition of systems thinking. And, *four*, by virtue of his conceptualization of an eternally born-again *demarcation* between *system* and *environment*, he implicitly: rejects Bateson's holism; underscores the inevitability of social systemic self-defining through redefining *environment*; and undercuts the status of *information* as an independent entity (or a chaste or unhindered linking device between the animate and the inanimate, especially as in Bateson's latter writings).

4. Assessing the Contributions of Bateson and Luhmann

In the foregoing two sub-sections of this chapter, I stressed the key points of similarity and difference between those reflections of Gregory Bateson and Nikalas Luhmann that can be said, or proclaim themselves, to be relevant to EC. By *relevance* I have meant to refer not just to the potential *positive* utility of these thinkers' contributions, but also to their speculative value. Hence, as I assess their contributions below—by ascertaining and characterizing the extents of their relevancies to the dominant praxis and discourse of contemporary EC—I also highlight the scenarios that may have emerged, or the results that may have followed, if they had been put to active use either individually or in some combination. In fact, as I will argue below, these two thinkers are relevant to EC in the large part because of their lack of an effective relationship with the discourse.

It would be naive to believe that the EC community's neglect of Bateson and Luhmann, or of systems theory as a whole, is entirely accidental or unintentional and does not already reflect its professional objectives; however, it would be dangerous to speculate about the intentions as such. Therefore, I shall focus only on what these two authors seem to have to offer, whether it is useful—to what extent and in what

ways—and whether, why, and on what points, it may also be counter-productive, to the future of EC. In the latest instance, the issue then ends in what alternatives there might be both to what these theorists offer and what the mainstream discourse of EC does.

A. Life Outside the Media

For a start, it is remarkable that neither of the two thinkers has the media as his central theoretical obsession. While Luhmann accords a separate focus to the general role and status of mass media within modern society (and has also made considered references to the media through his various works),[115] his overall range of concerns and volume of scholarship easily eclipse all that. Besides, his theory of EC is about inter-systemic communication, whereas the media can be assumed only as one of the informational conduits. In the case of Bateson, the neglect of the media is much graver as the media does not even show up as a theme! Even as Bateson's utter neglect of the media and Luhmann's merely topical concern with it perhaps deserve separate handling, altogether they translate into a de facto theoretical externalization of mass media from the conception of ecological communication. As such, they both also provide us with an outside location from where to have a re-look at the effective discourse of EC, at the overall implications of its central focus on the media, and at its dominant self-image as a media discourse about ecological issues. Before I expand upon the significance of the possibility of such a repositioning, let me briefly mention the place of *communication* in relation to the media *within* the context of EC in the works of Bateson and Luhmann.

As far as Bateson is concerned, the neglect of the media is part of his general non-centralistic positioning of human communication—radicalized in his latter ("ecological") writings. Even in his psychiatric writings, Bateson (in association with Ruesch) ultimately diluted the significance of human communication by expanding the scope of communication to universal exchanges of information. As such, *communication* in his framework is not merely the mechanism by which humans represent or talk about nature or the environment (in their attempts at forging a congruence between ideas and things): It is also what links a given species or object to the rest of the universe at the level of its informational constitution and exchange. Especially with his research on dolphins and their modes of communication kept in mind, Bateson obliges us to speculate whether

human communicative activities have been disproportionately valorized over any other informational or communicational exchanges across universal entities. Hypothetically, we could thus also choose to consider the media as merely a part-time activity of interest that humans engage in, and raise some seemingly absurd or otherwise peripheral questions as follows: Why should we not consider animal-to-animal and animal-to-human communications as part of ecological communication—and, hence, include within the discourse of EC? What might be the implications of such inclusions? How might they affect the idea of communication and ecology? What do EC researchers, but especially the theorists, stand to gain or lose by pursuing those ideas as normally as they would any others? These questions push us into realizing, and hopefully measuring, the extent of anthropocentrism that underlies our thinking about ecology and communication.

Especially in light of the above, I believe that even though the media has a very strong role in shaping public opinion about ecological issues, reducing ecological communication to it would be erroneous for a number of reasons as follows.

One, and as if to come to the rescue of the media: The view of EC as a media discourse about ecological controversies puts too much burden on the institution, even as it is meant to compliment or encourage it. In such a framework, the media is expected to pursue environmental causes actively, even aggressively, and is liable to be criticized or held accountable for ignoring or being passive in its approach toward them: In short, the media is presumed to be either active or actively passive in relation to environmental causes in the existing framework. As such, not enough attention is paid to how the ingredients of environmental issues themselves might affect the media, and different kinds of media. That angle of analysis may or may not be directly useful to the journalistic class, but it should be of interest to the theorists.

Two, given the fact that a large part of the world's population is illiterate, and a sometimes overlapping part of the same does not have access to the electronic media, restricting the focus of EC discourse to mass media representations is dangerous—at least in theory. In liaison with the previous observation, we have to realize the limits of the media in this sense as well. And, for all that, a fulsome theory of EC will need to develop a global ethnographic view of ecological communication; it would at least need to place

the media within its own ethnographic confines of a relatively techno-savvy and literate world.

Three, the institution of the media is also limited by a variety of other institutions—none of which seem to have figured prominently as theoretical concepts within the discourse of EC. The nation-state, for example, is a prime candidate for precisely such a theoretical initiative. No one can call the nation-state a subsidiary or effect of the media, but its influence on ecological communication cannot be denied. Furthermore, we have to ask, taking cue from Ashis Nandy's project on national selves, for example: How might a nation-state seek to project itself within the global (eco)communicative traffic? How might that affect, or interact with, the media? What other factors might be involved in the eco-communicative interactions among the nation-state and the media?

Four, while the discourse of EC has included plenty of empirical research on particular kinds of communication such as risk-, hazard-, and disaster-, most of it is very field-oriented and does not dare to define itself politically and philosophically. (A certain counterpoise to the above orientation is provided by a slim margin of literary and cultural critics invested in examining environmental themes within the works of literature and arts.) In practical terms, that measure of self-restriction within the discourse is perhaps fruitful: in that, for example, academic conferences on EC can welcome entries on a range of topics and approaches that make broad linkages between *communication* and *ecology*. However, that sort of practicality also seems to be a way to avoid confronting theoretical issues and politics underlying conceptual definitions. (Even literary and cultural critics provide no sustained discussion of theoretical issues specific to EC.) Therefore, I advocate investigating and theorizing about how different (mass) communications about environmental phenomena relate to each other—in the backdrop of the issues with which they seem to preoccupy themselves. Whereas, while it may be of practical importance to develop an autonomous strategy and a set of tools, for example, to communicate about ecological disasters to the public, what must matter to theory is also to consider what other *kinds* of communication may compete with *disaster* communication for the presentation of a given issue. Examining the interrelationships

among alternative sub-genres of ecological communication—especially as played out within the realm of mass communication—is critical to any comprehensive theorizing.

B. Modernity as the Evolutionary Outcome

For Luhmann, modernity is a foregone conclusion: and its sophistications are a result of evolution's effecting of (productive) complexity within the social realm. I have already discussed Luhmann's redefining of *evolution* against the background of the systems theory. I would now like to point out that while his redefining questions the inevitability of adaptation, it does not make evolution any less of a deterministic process. What Luhmann's redefinition accomplishes is only to allow us to include ecological dangers and mishaps as part of evolution—alongside society's (lack of) preparedness in dealing with them—without our having to consider it as an ultimately beneficial process for the biosphere. In short, while evolution loses in biological determinism, it gains in absolute determinism as Luhmann reinforces its socially deterministic role and underlines its self-perpetuating tendencies embodied in the norm of self-reflexivity. Hence, contrary to pre-modern societies, in the state of modernity (characterized by *functional differentiation*):

> [r]eason and consensus are replaced by evolutionary tests, that is, by uncertainty, and motivating orientations shift from symbols of identity, principles, and norms to boundaries from society, or to more or less fundamentalistic oppositions.[116]

I have no problem until the point where Luhmann (partly) "socializes" evolution. I also have no problem with the idea that evolution can only be all-inclusive, and that ascription of any positive or negative qualities can at best be a matter of post-hoc speculation. However, while these parameters allow us to view modernity as part of evolution or evolutionary complexity, they ought not to have been stretched to the point where modernity could appear as the only, or even a holistic, systemic translation of evolution. In other words, Luhmann's linking of evolution and modernity de-naturalizes and de-territorializes evolution to acceptable extents, but in the process it also incorrectly magnifies modernity to evolutionary proportions.

The wholesale adoption of modernity as the only, or an indisputable, system of reference is neither realistic nor helpful despite the fact that Luhmann's points of departure as well as return are understood to be modern, industrialized systems of the West. What makes this adoption unrealistic is its exclusion of historical as well as contemporary acts—even within the industrialized West—of non-modernistic resistance against modernity for reasons of ecology and otherwise (finding and reporting which has been a major part of Ashis Nandy's research program, for example).[117] Such exclusions or omissions seem to contribute directly to Luhmann's highly totalizing framework wherein "every formation of a subsystem is nothing more than a *new expression for the unity of the whole system*."[118] Conversely, the tendency to totalize results in his exclusion of street-communication as something other than "meaningful."[119] Furthermore, *functional differentiation* adds a reductive purity to his overall framework, wherein nothing but utilitarian and narrowly rationalistic projections of modernity show up as "society"—in the guise of the seemingly apolitical and non-ideological differential between *system* and *environment*. (Guised or not, *functional differentiation* is far too commonsensical a practice at the micro-level of daily life, policy, and planning to be packaged as an innovative philosophy; as a communication sub-theory, it can at best serve as an epistemology for limited purposes.)

What we need, instead, are analytical frameworks that are capable of viewing *modernity* as only one contentious force among others, and are willing to consider not only alternative modernities but also alternatives to modernity—within the realm of, let us say, ecological communication. Useful headways in that direction, in the first instance, have been made by a number of intellectuals, including Ashis Nandy, D. L. Sheth, Vandana Shiva, and Rajni Kothari, among others—who could be considered critical traditionalists. While none of these figures has addressed issues in ecological communication, their theoretical frameworks for socio-cultural, science, and technology analyses prepare us to look into possibilities inconceivable within the world of Luhmann.

C. Communication as *the* Operative Basis for Social Systems

An important contribution of Luhmann to the theory of communication is to direct our attention to "the distinction between problems of reference and problems of truth."[120]

This partially addresses the folly of the aboutness problematic prevalent within the praxis of ecological communication (and discussed in the previous chapter). Whereas, one of the lessons to glean from Luhmann is that we cannot and should not confine ourselves to the journalistic view of ecological communication—which typically focuses on how best to report about ecological issues truthfully (or on discussing problems encountered while attempting to do so)—or to rhetorical analyses of press coverage of ecological issues.[121] The above two options remain in place, but Luhmann obliges us to look beyond them and view the systemic interests of various social sectors and then consider what they refer to in the name of environment, or what they mean by environment—and why. In this proposed framework, for example, *truth* and *falsity* (critical to the aboutness problematic) turn out to be the binary coordinates of merely *one* system of society: science.[122]

I do not necessarily concur with the choice of true/false as the binary code for science (whereas a Larry Laudan would probably replace it with problem/solution), and I am also not sure about the labeling of systems according to sets of binary codes or even about looking at society in terms of clearly delineated systems. But, what I am sure of is that Luhmann has provided us with a powerful alternative heuristic: that accords an *a priori* validity to given social structures and systems and has us wonder what they must mean by environment and why those meanings must conflict. On that level, the divergence of perspectives about *environment* is essential to the very functioning of a complex society insofar as

> [c]ommunication is made all the more possible if we are not in the position of simultaneously perceiving what others are perceiving, and in this way we are independent of others' perceptions or failures to perceive that we perceive what we perceive.[123]

A related move would also be to consider how and why (self-observing observing) systems exclude or include specific operations from their purview and what that might imply for their own identities within given environments.

The downside of the above approach—given its resolute focus on systems—is that it works at the expense of the human individual and consciousness, and even that of specific entities that may or may not be considered systems in their own right. Luhmann does assert at one point that his framework does not make us "lose the individual, the

mind, the body as an observable observer" but merely allows us also to "focus on society as a self-observing, self-describing system."[124] That, however, is contradicted, or at least seriously diluted to appear as a mere lip service, because of several other statements—in which, for example, Luhmann deems "[c]onscious systems (minds, individuals, subjects)...uninteresting for the simple reason that there are too many of them and it would be difficult to justify choosing one out of five billion or more."[125]

Luhmann's hypersensitivity to the numbers above partly shoots from the sharp distinction he draws between social and psychological systems, whereas the human individual is understood as a psychological system, *communication* as a social system: and the principle of autopoiesis is believed to ensure their pursuance of self-interests as well as self-sustenance of sharply distinctive capabilities. Accordingly: "A social system cannot think; a psychological system cannot communicate,"[126] and, by way of an outrageous extension: "Humans cannot communicate; not even their brains can communicate; not even their conscious minds can communicate. Only communication can communicate."[127] In short—and however irrational it may sound—what we effectively get from Luhmann is an emphatic rejection of the individual, indeed any living being, from possible considerations of communication. That is made all the clearer in the remarkable assertion that: "[t]here is no such thing as "man"; no one has ever seen him; and if one is interested in the system of observation that organizes its distinctions by means of this word or concept, one discovers the communication-system called society."[128]

One could raise legitimate objections to the above on many levels. The simplest would of course be to retort back: *I have seen not one, but many men, and we all see them all the time!* That, however, would not quite count as a critique but more likely as an inconsiderate and anti-intellectual dismissal of Luhmann's position. On that, it is useful to stop for a moment and realize how imposing and alien Luhmann's terminology actually is—and whether it is worth working with the redefined definitions of a host of commonplace terms—such as "man," "communication," "social," "psychological," etc.—that he proposes and takes for granted in promoting his own framework. While all worthy philosophical efforts are exercises in radical redefining, in the case of Luhmann

the utility of those redefinitions is deeply suspect because, in my view, they neither inspire nor empower nor necessarily accurately represent the social reality.

But, and perhaps on a level of increased engagement with Luhmann's precepts, examples are plenty suggesting resistant and affirmative roles of individuals both in environmental and eco-communicative realms—despite, and perhaps because of, apathetic systemic contexts in which they found themselves. The evidence of individually-driven eco-friendly initiatives is overwhelming even in the corporate sector (of the United States), notorious for its rigidly production-centered approach.[129] Furthermore, there is no outstanding reason why we must be interested in accepting the system/environment differential as our point of departure—either for social theory or the theory of EC—or/and our point of return (as Luhmann's circular or autopoietic logic insists), or the sharp distinctions between social and psychological systems. Luhmann's way out of those dichotomies is the range of concepts such as "interpenetration," "operational closure," and other such clearly delineated delineating delineations! To me, they are nothing more than analytical conveniences lacking in social or human realism: The operative social reality is more about functional and ideological overlaps, contextual unities, human effort, and interactive exertions of specifics.

D. Positivism, Futurism, & Resistance

Eva M. Knodt locates "the difference between Luhmann's diagnosis of modernity and the contemporary discourse on postmodernism...in the theoretical rigor with which Luhmann thinks through and embraces the consequences of modernization."[130] No serious reader can raise any reasonable doubts as regards the rigor and breadth of Luhmann's scholarship (although many may question the allegation of its lack in postmodern scholarship). What is useful, however, is to examine the implications of the specific character of Luhmann's rigor as we assess it, whereas the reasoning behind Knodt's own appreciation—or, supportive explication—thereof provides us with some interesting clues. Knodt upholds Luhmann's attitude toward modernity

> *not* because the society in which we live is the best of all possible worlds,
>
> but because an acceptance without nostalgia of the structural limitations of

modernity is a precondition, and possibly the only way, of finding creative solutions to its problems.[131]

Knodt's comment is pregnant with meaning: The words that I find most revealing are "acceptance without nostalgia," "possibly the only way," and "creative solutions." They betray and uphold a strong general sense of closure and lack of alternatives, which is meant to be greeted with a docile and conformist problem-solving attitude. On that count, the distinction between Luhmann and postmodernists is not so much about rigor, but about the kind of *positivistic* twist, à la August Comte, that the former has chosen to accord to modernity and modernistic worldview. While most prominent postmodernists themselves have considered Postmodernism a celebratory discourse (with Jacques Derrida asserting Deconstruction as a positive philosophy), their positivism emanates from hopes attached to pluralistic resistances to hegemonic centers and establishments. By contrast, Luhmann accepts it as a fact that "modern society is, and continues to be factually without alternatives," and deems it meaningless to resort to "irrelevance" by formulating "a theory of postmodernity or [acting] out one's aversions to the factually supporting structures of our social systems."[132] In short, Luhmann's theory is a rationale and an intellectual agenda aspiring to comply as far as possible with the way things have turned out to be—and are presumably predestined to go—within, and in the form of, modernity. Luhmann's contribution may well be radical within the theoretical realm (given his exhaustive argumentation, outlandish analytical positions, and usage of insights from natural sciences and engineering), but in the social and political realms it is at best conservative and at worst boringly conformist.

In line with his compliant form of futurism, Luhmann disciplines himself, and exhorts the rest, to define "modern society structurally in terms of functional differentiation."[133] The biggest omission from this framework is that of *culture* and cultural differences, and hence of the now-conventional issues within social theory of gender, race, age, class, caste, and sexuality. Luhmann drops enough hints in his various works to indicate that categories such as the above are merely ways to distinguish reality and are, as such, included in the ultimate distinction between *system* and *environment*. As part of that general conviction, he also claims:

> Observation is nothing but making a distinction to indicate one side and not the other, regardless of the material basis of the operation that does the job, and regardless of the boundaries that close a system (brain, mind, social system) so that it becomes an autopoietic system, reproduced by the network of its own operations, and eventually irritated but never determined by its environment.[134]

My own response to the above is indeed antithetical to Luhmann's proposition: I plainly re-state the stale dictum that *all* observations are determined, to a great extent, by their environments (including the observation that observation is "never determined by its environment"). But, beyond that, what I would like to underline is Luhmann's penchant for abstractionism, and his seeking to expand older materialist categories, such as Marx's *class*, "by substituting [them with] *forms of differentiation*."[135] Contra Luhmann's belief that the above substitution "opens the classical sociology of knowledge for more structural complexity," I fail to comprehend how a *substitution* could *expand* what it is intended to substitute.[136] That Luhmann's conviction related to categorical expansion[137] is more a matter of arcane academic fantasy than intellectual realism is further evidenced by the *content* of his own statement that follows the above proposition, whereas:

> Differentiation becomes system differentiation; system differentiation becomes a reentry of system-building within systems, new boundaries within already bounded systems, forms within forms, observers within observers.[138]

Clearly, Luhmann's substituted world of abstractions is more interested in expanding itself than the older categories of sociology: And that expansion hinges upon an *a priori* neutralization of actual and possible resistances to the establishments of modernity, indeed of the idea of genuine political resistance itself. Whereas, alongside his peculiar strand of abstractionism, come the persuasions to develop a fresh attitude toward social hierarchies—because "the structure of modern society is determined by functional differentiation and no longer by a coherent hierarchical stratification or by a one-center/peripheral differentiation."[139] As a statement about the variegated nature of contemporary hierarchies cross-checking each other, the above is really not much of a novel insight; what *is* important are the epistemological and political implications of the

general viewpoint it represents. In which case, Luhmann's own stand is clear: The distinction "between the environment of a system and systems in the environment of this system...blows apart the old thematic of domination/oppression."[140] Furthermore:

> Whether and to what extent one system comes to dominate another finally depends not least on the extent to which both the systems and the system of their relations depend on the respective environment. In this sense, even the "absolute" domination assumed in older models of kingship was never extreme, never determining, but more a mode of system-description that articulated a certain power of disposal by the system over itself.[141]

But, in my view, Luhmann's abstractionism and concerted generalization to-the-level-of-system destroy conventional thematics, leaving no appreciative space for any genuine resistance or even critique. The virtual denial of the effects of hierarchical imbalances only serves to rescue the structures of power from the possibility of protest at every level, whereas the concept or tool of *functional differentiation* turns out to be an exercise at inculcating a bureaucratic worldview in the reader. That is the worldview that, through the process of selling a frictionless and unidirectional vision of the future, blithely overlooks operative equations of unequal power and expects others also to do the same. In such a scenario, it does not help that Luhmann takes the higher theoretical ground and then characterizes the future in remarkably sanitized terms in arguing that "theories of society that refuse adaptation will increasingly be described as counterfactual, as purely normative, as having a conservative bias toward ideas, even as being ideological."[142] The best that the above stance proves is that Luhmann himself has adapted well to his own version of (future) reality; and, ironically, that adaptation is what makes him appear counterfactual, purely normative, and having a conservative bias toward ideas!

On those counts, I stand unconvinced, as well, about Luhmann's dismissal of the contributions of the Frankfurt School to the critique of modernity: simply because what he claims "offers itself to observation" or believes "has become realized as society" is nevertheless a very particular, highly disciplined, and structured view of society and the world.[143] Furthermore, his metaphorical rejection of Frankfurt as a place where "modern society at the end of this century can achieve a representation of itself in itself" may or

may not be judicious (knowing that he calls it his "verdict"); but, what I feel far less confident about is the assumption inherent to that verdict that modernity can only look (in)to itself for its own improvement, that it can achieve its representation only in itself. Even assuming for a moment that modernity were indeed such a coherent and total structure that Luhmann makes it out to be, I am inclined to believe that: (1) There are plenty of external representations of modernity available that are valid; (2) Modernity stands to learn from its own others, the traditional, the non-modern, and the underdeveloped; (3) It is erroneous to assume that critical representations of modernity are counterfactual or invalid simply because of what they have chosen to reject or sought to represent; and, (4) It must be a matter of grave concern—and hence a criticism in its own right—if modernity indeed were such a non-negotiable project.

5.   Conclusion

The preceding sections show that efforts (potentially) relevant to theorizing EC have happened to come from systems theory (and are barely recognized by the pragmatically-inclined communities of EC practitioners and researchers). The contributions of Bateson and Luhmann, the two thinkers most directly relevant to the theory of EC within systems philosophy, differ a lot in their scope and character: While Bateson has clear spiritual, holistic, and naturalistic aspects to his worldview, Luhmann is rather mechanistic, rigid, and closely *social*. Nevertheless, both the thinkers seem to converge in their lack of explicit political or ideological standpoints, emphasis on systems and networks as cognitive frameworks, abstruse writing, and failure to leave a compelling legacy for future participants of EC. As such they both engage in a politics of cultural, political, and ideological neutralization of *ecology* and *communication* by offering, respectively, an epistemology and a systems framework to address the two phenomena (and their conjoining situation of EC).[144] (And, for all that, the privileged journalistic ethic of objectivity—within the discourse of EC— unwittingly comes close to the political neutralization aspired by their frameworks.)

In general, however, systems theory—especially via Luhmann—suffers from the problems of inanely arcane detailing (or verbose), mechanistic self-discipline of thought, provincial outlook, and conformism (especially directed toward modernistic structures):

It is a philosophy that is remarkably self-absorbed, and altogether too dependent on narrow terminological differentia and apparently mandatory analytical frameworks. Furthermore, while systems theory does not include a socio-political reform program (which would have been an asset), it is very normative in its interpretive structure (in many ways quite a liability). The above issues then raise the following question about systems theory: Why would people want to go through this vast amount of highly rigid and rather dry intramural academic communication when it has so little to offer for the theorization of broader socio-political consequence? That, in a nutshell, also answers why the discourse of EC has not warmed up yet to Luhmann's initiatives. In the end, and in real terms, the systems theory is truly about sustaining and perpetuating the systems by rendering *society* in their forms in its own grand visions.

As an alternative to what has never been quite embraced, i.e. systems theory, I propose to take some preliminary steps toward developing a cultural and political theory framework for the future discourse of EC. I propose this framework to be: (1) global in character, both in its sources of scholarly inspiration and topical outlook; (2) respectful and cognizant of the larger socio-political realities of the world, with all its frailties, inefficiencies, and imperfections; (3) critically engaging with pertinent political practices and ideologies; and, (4) responsive to the emergent needs of the discourse of EC. In relation to the last point, I would like to address, either by way of theorizing or specific analysis, the following three themes (each of which, though clearly very important, stands neglected within the discourse in *theoretical* terms other than journalistic): *technology*; *development*; and, *the nation-state*.

I do not claim that I am proposing a complete philosophy of EC; I am also not claiming that the above themes are the only themes that need to be developed. I am merely responding to the pressing need within the discourse to engage with the above themes in theoretical terms—and in the backdrop of my own strengths and limitations as a researcher. The forthcoming chapters are expected to serve as a fitting testimony to the above commitment.

Notes

[1] Not knowing German, I cannot make any claims either way as regards (the introductions to) their German editions.

[2] Niklas Luhmann, "Can Modern Society Adjust itself to the Exposure to Ecological Dangers?," *Proceedings of the Rhenish-Westfallian Academy of Science*, RWAkW G278, Opladen, May 15, 1985.

[3] Niklas Luhmann, *Ecological Communication.* Translated from the German by John Bednarz, Jr. The University of Chicago Press: Chicago, 1989, p. 28. (First German publication: Westdeutsches Verlag GmbH: Opladen, 1986.)

[4] *Ibid*.

[5] *Ibid*, pp. 28-31.

[6] *Ibid*, p. 28.

[7] *Ibid*, p. 29.

[8] *Ibid*, p. 29.

[9] *Ibid*, p. 7.

[10] As Luhmann clarifies:

> [W]e orient the general theory of social systems to a general systems theory and thereby justify the use of the concept "system." We advance a claim to universality for the theory of social systems as well, which is why we speak of a "general" theory of social systems. That is to say, every social contact is understood as a system, up to and including society as the inclusion of all possible contacts. In other words, the general theory of social systems claims to encompass all sociology's potential topics and, in this sense, to be a universal sociological theory.

See *Social Systems,* Trs. John Bednarz, Jr. & Dirk Baecker, Stanford University Press: Stanford, California, 1995, p. 15.

[11] *Ibid*, p. 23.

[12] *Ibid*, p. 21.

[13] *Ibid*, p. 21.

[14] *Ibid*, p. 9.

[15] *Ibid*.

[16] *Ibid*, p. 12.

[17] *Ibid*, p. 13.

[18] *Ibid*, p. 13.

[19] *Ibid*, p. 181.

[20] *Ibid*, p. 18.

[21] *Ibid*, p. 190.

[22] *Ibid*, p. 190.

[23] *Ibid*, p. 178.

[24] *Ibid*.

[25] *Ibid*, p. 202.

[26] *Ibid*, p. 203.

[27] *Ibid*, p. 207.

[28] *Ibid*, p. 198.

[29] *Ibid*, p. 9.

[30] *Ibid*, p. 183.

[31] *Ibid*.

[32] *Ibid*, p. 191.

[33] *Ibid*, p. 187.

[34] *Ibid*, p. 181.

[35] *Ibid*, p. 187.

[36] *Ibid*, p. 182.

[37] *Ibid*, p. 25.

[38] *Ibid*.

[39] *Ibid*, p. 182.

[40] *Ibid*, p. 25.

[41] *Ibid*, p. 182.

[42] *Ibid*, p. 21.

[43] *Ibid*, p. 25.

[44] *Ibid*, p. 24.

[45] *Ibid*, p. 31.

[46] *Ibid*, p. 24.

[47] *Ibid*, p. 31.

[48] *Ibid*, p. 188.

[49] *Ibid*.

[50] *Ibid*.

[51] *Ibid*, p. 24.

[52] *Ibid*, p. 181.

[53] *Ibid*, p. 180.

[54] *Ibid*, p. 9.

[55] *Ibid*.

[56] *Ibid*, pp. 194, 195.

[57] *Ibid*, p. 176.

[58] *Ibid*, p. 177.

[59] *Ibid*, pp. 178-179.

[60] Luhmann, *Ecological Communication*, p. 6.

[61] *Ibid*.

[62] Luhmann, *Social Systems*, p. 184.

[63] *Ibid*, p. 196.

[64] Luhmann, *Ecological Communication,* p. 18.

[65] *Ibid*.

[66] Luhmann, *Social Systems*, p. 194.

[67] *Ibid*, p. 192.

[68] Luhmann, *Ecological Communication*, p. 13.

[69] *Ibid*.

[70] *Ibid*.

[71] *Ibid*, p. 14.

[72] *Ibid*, p. 145.

[73] Luhmann illustrates "resonance" with a patently post-structural example:

One can imagine a dictionary that would define nearly all the concepts that it uses by referring to other definitions and would allow reference to undefined concepts only in exceptional cases. An editorial committee could then be formed which would supervise whether language changes the meaning of those undefined concepts or, though the formation of new ones, disturbs the closure of the lexical universe without determining how changes in the entries are to be handled when this disturbance occurs. The richer the dictionary, the more it is kept going by the development of language, i.e., the more resonance it will be able to produce.

Ibid, p. 15.

[74] *Ibid*, p. 22.

[75] *Ibid*.

[76] *Ibid*.

[77] *Ibid*.

[78] *Ibid*.

[79] *Ibid*.

[80] *Ibid*, p. 26.

[81] *Ibid*.

[82] *Ibid*.

[83] *Ibid*, pp. 26-27.

[84] *Ibid*.

[85] *Ibid*, p. 27.

[86] *Ibid*, pp. 33-34.

[87] *Ibid*, p. 34.

[88] *Ibid*.

[89] *Ibid*, p. 35.

[90] *Ibid*, p. 36.

[91] *Ibid*.

[92] *Ibid*.

[93] *Ibid*, p. 37.

[94] *Ibid*, pp. 36-37.

[95] *Ibid*, p. 36.

[96] *Ibid*, p. 37.

[97] *Ibid*.

[98] *Ibid*, p. 145.

[99] *Ibid*, p. 41.

[100] *Ibid*.

[101] *Ibid*, p. 45.

[102] *Ibid*.

[103] *Ibid*.

[104] *Ibid*, p. 48.

[105] *Ibid*, p. 49.

[106] *Ibid*, p. 50.

[107] *Ibid*, p. 48.

[108] *Ibid*, p. 52.

[109] *Ibid*, p. 64.

[110] *Ibid*, p. 76.

[111] *Ibid*, p. 86.

[112] *Ibid*, p. 95.

[113] *Ibid*, p. 101.

[114] To cite one example:

> [The] key to the ecological problem, as far as the economy is concerned, resides in the language of prices. This language filters in advance everything that occurs in the economy when prices change or do not change. The economy cannot react to disturbances that are not expressed in this language—in any event, not even with the intact structure of a differentiated function-system of society. The alternative is the destruction of the money economy with unforeseen consequences for modern society.

Ibid, p. 62.

[115] See especially: Niklas Luhmann, *The Reality of the Mass Media*, Tr. Kathleen Cross, Stanford University Press: Stanford, California, 2000.

[116] Niklas Luhmann, *Theories of Distinction: Redescribing the Descriptions of Modernity*, ed. William Rasch, trs. Joseph O'Neil, Elliott Schreiber, Kerstin Behnke, and William Whobrey, Stanford University Press: Stanford, California, 2002, p. 193.

[117] See especially Ashis Nandy and Shiv Vishwananthan's "Modern Medicine and its Non-Modern Critics: A Study in Discourse," in Nandy, *The Savage Freud and Other Essays in Possible and Retrievable Selves*, Princeton University Press: Princeton, New Jersey, USA, 1995, pp. 145-195.

[118] Luhmann, *The Reality of the Mass Media*, p. 107.

[119] *Ibid*, p. 36.

[120] Luhmann, *Theories of Distinction*, p. 64.

[121] Especially since "[i]n social theory, both the primacy of language theory and the concept of intersubjectivity must be abandoned and replaced with the concept of a self-referential and close system of social communication," *ibid*, p. 182.

[122] Whereas:

> Science would continue to observe itself in terms of the schema of its own code, that is, "true" and "false"; and it would still not think of thematizing the paradoxical nature of this code, that is, of asking whether the distinction of this code is itself a true or a false distinction.

Ibid, p. 72.

[123] *Ibid*, p. 178.

[124] *Ibid*, p. 112.

[125] *Ibid*, p. 105.

[126] *Ibid*, p. 165.

[127] *Ibid*, p. 168.

[128] *Ibid*, p. 148.

[129] See, for example: Aseem Prakash, *Greening the Firm: The Politics of Corporate Environmentalism*, Cambridge University Press: Cambridge, 2000.

[130] Eva M. Knodt, "Foreword," *Social Systems*, p. xxxvi.

[131] *Ibid*.

[132] Niklas Luhmann, *Theories of Distinction: Redescribing the Descriptions of Modernity*, ed. William Rasch, trs. Joseph O'Neil, Elliott Schreiber, Kerstin Behnke, and William Whobrey, Stanford University Press: Stanford, California, 2002, p. 67.

[133] *Ibid*, p. 67

[134] *Ibid*, p. 105.

[135] *Ibid*, p. 110.

[136] *Ibid*.

[137] The idea of categorical expansion is further underlined as Luhmann claims that
> [i]f...one defines modern society structurally in terms of functional differentiation and derives polycontextuality, second-order observation, and the distinction of distinctions—especially the distinction between problems of encoding (for example, true/untrue) and problems of reference (self-reference and external reference)—then, in any case, an opportunity for observations and descriptions presents itself that is richer in structures.

Ibid, pp. 67-68.

[138] *Ibid*, p. 110.

[139] *Ibid*, p. 89.

[140] Luhmann, *Social Systems*, p. 17.

[141] Luhmann, *Ibid*, pp. 17-18.

[142] Luhmann, *Theories of Distinction*, p. 89.

[143] Specifically, Luhmann argues:
> The distinction, above all, between affirmative and critical, a distinction so beloved in Frankfurt, misses the connection to what offers itself to observation. It is a specific case of blindness, for it excludes the possibility that what has become realized as society gives cause *for the worst fears, but cannot be rejected.*

Ibid, p. 193.

[144] As Harries-Jones points out about Bateson: "He was definitely not a political man: 'my personal politics are simple. I utterly despise the whole business' (Letters, 1497-43/1973)," *A Recursive Vision: Ecological Understanding and Gregory Bateson*, p. 30.