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I.

Mainstream systems theory conceives of systems as "open systems" feeding upon exchanges with their environment. These exchanges can be structured and limited to the needs of the system by restricting it to "inputs" and "outputs." This concept of open systems has been the answer, first from biologists and then from sociologists, to the laws of thermodynamics and to the probability of decay in the sense of vanishing differences. The problem was how to avoid this probability—that is, how to reverse this tendency towards entropy—and above all, how to explain a world which is obviously able to build up order and to maintain negentropy. Since thermodynamic law presupposes closed systems, open systems seemed to be the solution. However, an annoying question remains: *What is* a system? Or more to the point: *How does a system operate* so that it can be called an "open system"? Or, if a system depends upon its environment, what prevents a growing confusion between system and environment and, again, thermodynamic decay?

The earliest response, fashionable during the 1950s and accepted, for instance, by Talcott Parsons, was to formulate the problem as one of system maintenance or boundary maintenance.[1] The answer was that a system that cannot fulfill the requisite of system maintenance will dissolve itself and will no longer be available for investigation. This led to a revival of teleology (the new brand name was functionalism) and again, as we know from the famous Molièresque calming power of opium, to a tautological reformulation of the problem. Hence, we stay with our question: What kind of operations produce the unity of the system with the effect that it can maintain itself, that is, continue to operate and maintain connections to its environment? How are we to understand that there is something that can select inputs and outputs and survive irritating information about its environment according to internal needs?

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[1] *See* TOWARD A GENERAL THEORY OF ACTION 108-09 (Talcott Parsons & Edward A. Shils eds. 1951).

Recalling all these attempts to avoid the fate of entropy, the theory of autopoietic, self-reproducing systems does not reinvent the idea of complete self-causation in empirical isolation.[2] This should be obvious. The description of a system as autopoietic, as autonomous, as operationally closed, refers to the network of its operations and not to the totality of all empirical conditions, that is, the world. The question is not how a system can maintain itself without any environmental support. Rather, it is what kind of operations enable a system to form a self-reproducing network which relies exclusively on self-generated information and is capable of distinguishing internal needs from what it sees as environmental problems.

The answer is no longer a disguised tautology but an obvious one. The unity of the system is produced by the system itself.[3] The methodological task becomes to "unfold" (as logicians would say) this tautology, and this has to be done by empirically identifying the operations which produce and reproduce the unity of the system (for example, the biochemical processes within a living cell).

It would be easy to advance from here by distinguishing between subjects and objects, or scientific perspectives and realities. But let us first take another look at the question of how a system produces its own unity. Asking "how" leads to the further question of who asks the question; or, what are the systemic conditions of asking this question; or simply, who is the observer? Is it the system itself or some external unit? Perhaps it is the famous subject or simply another system?

This technique of reflexive questioning dissolves—or should I say, deconstructs?—the distinction between subject and object and leaves us with the assumption of "observing systems" in the double sense of the English *-ing* form.[4] We ourselves may be observing systems observing observing systems; and our question remains. Are self-maintaining, self-reproducing systems necessarily observing systems, able to distinguish themselves from their environment? How can they maintain themselves if they cannot distinguish themselves and what is the operational basis for this self-observation? Is the

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[2] Objections which focus on this point reject a theory that nobody proposes. *See, e.g.*, MICHEL VAN DE KERCHOVE & FRANCOIS OST, LE SYSTÈME JURIDIQUE ENTRE ORDRE ET DÉSORDRE 154-59 (1988).

[3] The same tautology appears in evolutionary theories. Systems survive by adapting themselves to their environment, and adaptation is proven by survival. The problem is the solution because the solution is the problem. And here, too, the tautology has to be broken up by empirically distinguishing between the internal operations that change the systems and the resulting survival. We have to admit, therefore, the possibility that maladapted systems will survive.

[4] *See* HEINZ VON FOERSTER, OBSERVING SYSTEMS (1981).

classical problem of reference (as a condition of meaning and truth) itself a meaningful question, or must it be transformed into a question of how to distinguish between self-reference and external reference? If so, what kind of systems are able to make such a distinction and by what kind of operation? The distinction between self-reference and external reference is by necessity an internal distinction. But logically, how can the distinction between internal and external be an internal distinction? And empirically, what kind of operation produces and reproduces this distinction within the system and thereby solves the logical puzzle (whereas logicians would need to look for higher logical types or levels to unfold the problem)?

All this may convey the impression of being unnecessarily complicated and of epistemological interest only. But my intention is to prepare the ground for understanding the concept of operational (or systemic) closure, and I have to deconstruct all kinds of epistemological obstacles first so that you may see the point. We could take the route of Ferdinand de Saussure[5] and Jacques Derrida,[6] or George Spencer Brown,[7] and follow the injunction to always start with difference and not identity, with distinction and not unity. But we could also accept the results of empirical sciences, namely cognitive sciences and systems theory, which dissolve the classical privileges of ontology and epistemology by organizing questions and answers.

Our first question will always be: Who is the observer; or, what is the system that distinguishes itself from its environment? The concept of operational closure will provide an answer to this question. Of course, as a single concept, it will not "explain" anything, neither the state of the system nor its structural drift. The same holds true for the concept of autopoiesis.[8] But any explanatory theory will have to describe how systems cope with the problems of closure and openness, and this cannot be done in causal terms. If you continue to mix up questions of causal isolation with questions of operational closure—or in more abstract terms, questions of causality and questions of reference—you may observe other things with other instruments, but you will not follow this article.

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[5] *See generally* FERDINAND DE SAUSSURE, COURSE IN GENERAL LINGUISTICS (Charles Bally & Albert Sechehaye eds., Roy Harris trans., 1983).

[6] JACQUES DERRIDA, WRITING AND DIFFERENCE 154-68 (Alan Bass trans., 1978).

[7] GEORGE S. BROWN, LAWS OF FORM (1979).

[8] This impressive neologism in particular seems to mobilize exaggerated expectations which then are easily refuted. See, for example, the objections of BERND MARIN, CONTRACTING WITHOUT CONTRACTS—ECONOMIC POLICY CONCERTATION BY AUTOPOIETIC REGIMES BEYOND LAW? (European University Institute, Working Paper No. 87/287, 1987).

II.

We are now ready to start on our way through the legal system, that is, ready to meet the first obstacle. The first surprise will be that the famous protagonists of operational closure at the level of general systems theory strongly reject its application to social systems. Heinz Von Foerster finds this idea shocking;[9] nor would Humberto Maturana and Francisco Varela join in calling social systems autopoietic systems.[10]

Why not? The answer is easy. Not being sociologists, these authors think of social systems as consisting of concrete people, individuals with bodies and minds. Of course, it is impossible to admit the closure of social systems which include the reproduction of molecules in cells, or of cells in bodies, or of thoughts in minds, as social operations within the social system.[11] But this mistake simply points to unexplored possibilities of clarification. We have to be very precise in defining the type of operation which reproduces, within a closed network of its own productions, the unity of a social system. This operation can never be defined as the biochemical production of life, nor can it be defined as the reproduction of thoughts by thoughts within the internal darkness of a conscious system.[12] The operation we are looking for can only be communication.

In fact, the theory of autopoietic systems could bear the title *Taking Individuals Seriously*, certainly more seriously than our humanistic tradition. Taken as an individual, no human being can be part of any other systems. Critics frequently miss this point. Arthur Jacobson, for one, states that certainly the common law (if not the continental law) includes "[t]he role and needs of the individual."[13] But actually, the position of the individual in both versions does not differ at all. Jacobson goes on to say that:

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[9] Heinz von Foerster expressed this view in the context of an interview, *Généalogies de l'auto-organisation*, 8 CAHIERS DU CENTRE DE RECHERCHES ET D'ÉTUDES APPLIQUES 263 (1985).

[10] *See* Humberto R. Maturana, *Biologie der Sozialität*, 5 DELFIN 6 (1985).

[11] Even the political reasons which make the idea unacceptable are obvious. Maturana one day objected to the idea that a social system like Chile's under the rule of Pinochet produces and reproduces individuals by its own structure and process.

[12] Almost a Hegel citation. Hegel calls it "*die finstere Innerlichkeit des Gedankens*." GEORG W. F. HEGEL, *Vorlesungen über die Ästhetik*, *in* 13 WERKE 18 (1970).

[13] *See* Arthur J. Jacobson, *Autopoietic Law: The New Science of Niklas Luhmann*, 87 MICH. L. REV. 1647, 1683 (1989). *Compare* Christophe Grzegorczyk, *Système Juridique et Réalité: Discussion de la Théorie Autopoiétique du Droit*, *in* CONTROVERSES AUTOUR DE L'ONTOLOGIE DU DROIT 179 (Paul Amselek & Christophe Grzegorczyk eds., 1989) with the comments of Gunther Teubner, *How the Law Thinks: Toward a Constructivist Epistemology of Law*, 23 LAW & SOC'Y REV. 727, 739-41 (1989).

> Individuals figure in the common law only in the character they display through interaction oriented toward the values expressed in prior applications of norms. The individuals applying norms may have hosts of attitudes (personality, emotion) toward the application. The attitudes do not matter: Only the *display* of character in interaction matters.[14]

This can be translated as: Only communication matters because legal systems are social systems!

But why communication? Communication is one of those rare types of operation that has the capacity to solve the riddle of self-transcendence.[15] Seen as an operation, it cannot leave the society as the system that integrates all communications, for no system can operate outside of its own boundaries, and communication cannot be noncommunication. But observing itself and the ensuing system of communication, the observing operation needs, similar to Fichte's Ego,[16] a distinction between communication and non-communication, or system and environment. The communicative system is or is not self-transcending depending on whether you (or the system itself) observe it as an operating or an observing system. The evolutionary success of communicative systems depends upon introducing the difference between system and environment into the system—a "re-entry of the form into the form" in the words of George Spencer Brown.[17]

Of course, the concept of communication has to be adapted to this task because, as we know, different concepts make different distinctions and different distinctions make different observers. Communication cannot be defined as communicative action because this would require the unthinkable: an actor without body and mind.[18] And it cannot be defined as transmission of messages or information because this would presuppose non-transmitted codes and shared frames from which information is selected.[19] In any case, communi-

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14 Jacobson, *supra* note 13, at 1684.

15 *See* Jean-Pierre Dupuy, *On the Supposed Closure of Normative Systems*, *in* AUTOPOIETIC LAW: A NEW APPROACH TO LAW AND SOCIETY 51 (Gunther Teubner ed., 1988), for this problem with reference to the legal system.

16 JOHANN G. FICHTE, *Grunlage der Gesamten Wissenschaftslehre*, *in* 1 AUSGEWÄHLTE WERKE §§ 1-3 (1964).

17 *See* BROWN, *supra* note 7, at 56-57, 69-76.

18 Renate Mayntz, for one, likes to remind me that there are no actors without bodies and minds. Certainly not, but since we can not *include* all biochemical, neurophysiological, psychic, etc. activities as part (link? step?) of the communication processes, we have to *exclude* actors. The question is whether and how to take individuals seriously.

19 *See* Benny Shanon, *Metaphors for Language and Communication*, 3 REVUE INTERNATIONALE DE SYSTÉMIQUE 43 (1989). *See also* TERRY WINOGRAD & FERNANDO FLORES, UNDERSTANDING COMPUTERS AND COGNITION: A NEW FOUNDATION FOR DESIGN (1986).

cation should not be thought of as *including* something—the repertoire of possibilities from which information is selected—that is *not* communicated. Rather, communication seems to be an emergent reality of its own, a kind of autopoietic network of operations which continually organizes what we seek, the coincidence of self-reference (utterance) and external reference (information). Communication comes about by splitting reality through a highly artificial distinction between utterance and information, both taken as contingent events within an ongoing process that recursively uses the results of previous steps and anticipates further ones.

When we begin to use this concept of communication, we immediately notice a new problem. Once started and engaged in reproducing itself, the operation of communication produces the societal system, the encompassing system of society, and, nowadays, the global system of the world society—nothing more and nothing less. Our conceptual framework produces a clear concept of society as the closed system of connectable communications, reproducing communication by communication. Given the present state of sociology, this may be an important step toward a theory of society. But how to advance from here? If the society is an operationally closed autopoietic system, can we conceive of systems within the societal system as closed systems as well? Biologists have to face the question of whether, if cells are autopoietic systems, they can also conceive of organisms as autopoietic systems. Sociologists may have to start globally and doubt whether, if societies are autopoietic systems, subsystems of the societal systems can be autopoietic systems as well. Can there be autopoiesis within autopoiesis, closure within closed systems? And what exactly does "within" mean in this case?

Consider our topic of the legal system as a social system within the societal system, as a subsystem of society. A description of the legal system as an autopoietic system would require us to say that the states of the system are exclusively determined by its own operations. The environment can eventually destroy the system, but it contributes neither operations nor structures. The structures of the system condense and are confirmed as a result of the system's own operations, and the operations are in turn recursively reproduced by structural mediation. In this sense, the system is a structure-determined system. But how can the society tolerate, or even promote, the emergence of such a degree of autonomy within itself? It is obvious that the legal system uses communication as its own basal operation and that it uses language, although employing special terminology. It is also obvious that we find a flow of communication crossing the boundaries of the

legal system (which, of course, does not mean that the legal system can communicate as a collective actor on its own behalf). On the other hand, we could hardly think of a legal system as being unable to recognize its own boundaries, as an arbitrarily designed analytic object of outside observers. Such a system would be unable to distinguish between the legal and the external consequences of a legal decision, to mention a famous and controversial issue.[20] It would be unable to find reasons for staying with precedents, for distinguishing, or for overruling. It would even be unable, as we shall see, to separate conceptual (internal) issues and interest (external) issues. As a social system within the societal system, it reproduces society by communication. There is no sense in separating law and society as if these were two different objects, and not even good sense in treating the society as the environment of the legal system. The legal system itself is an inseparable part of the societal system—it does not simply depend on external sources for social support and legitimation, but is an inextricable part of the network that reproduces the society by recursively connecting communication with communication. Nevertheless, the legal system is a closed system, producing its own operations, its own structures, and its own boundaries by its own operations; not by accepting any external determination nor, of course, any external delimitation whatsoever. To put it even more pointedly, just because the legal system operates as part of the social network of societal operations, there is no sense in looking for external sources of determination and delimitation. As part of the societal system, the legal system is a self-organizing, self-determining system. There is nothing else, no external system that could do the job.

III.

Reviewers and critics of systems theory who start with a different conceptual framework—or, for the most part, without any—are notoriously unable to identify the hard questions. They normally operate at the level of superficial plausibilities or implausibilities, and "closure" is, of course, a highly improbable evolutionary achievement. They point to obvious causal connections and to important historical and semantical correspondences between the societal system and the legal system. Hierarchical societies of the past, of course, had a different law than modern society, and the constitutional realities in the

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[20] *See* Bernard Rudden, *Consequences*, 24 JURID. REV. 193 (1979); Neil MacCormick, *On Legal Decisions and Their Consequences: From Dewey to Dworkin*, 58 N.Y.U. L. REV. 239 (1983).

United States differ from constitutional realities in Brazil. No doubt, but also, no objection.

It should be possible to discuss a theory at the level of its own problems—I almost feel the temptation to recall the romantic notion of critique[21]—and these problems are more serious and more difficult than a critique aiming at rejection would ever imagine. As in all cases of operational closure, the problem is *how to define the operation that differentiates the system and organizes the difference between system and environment* while maintaining reciprocity between dependence and independence. This indeed is a most difficult question; it is the core problem of a theory of the legal system.

Within the traditional framework of functionalism and division of labor one would tend to point to a specific function, and this remains part of the truth. The function of the legal system may be defined as producing and maintaining counter-factual expectations in spite of disappointments.[22] The communication of this intention to maintain one's own expectations even if they are not fulfilled (that is, to refuse to learn from facts) uses the symbols of normativity, for example, the word "should." But this does not suffice for closing the system because there are many nonlegal norms, and the concept of function itself suggests looking for functional equivalents and asking the question of whether learning would not be the better (or at least a functionally equivalent) way to equip the system with stable expectations. As we know, this question had been answered by recourse to nature and Aristotelian ethics which teach only how to avoid errors with respect to the good as the objective of action. Nowadays, people look for moral rules or values to found the legal system in nonlegal norms—the famous Jellinek-Weber-Habermas line of "legitimation,"[23] or the American discussion of moral aspiration versus original intent as a guideline for an interpretation of the constitution. My advice would be to unask such questions—or to "deconstruct" them—and to replace them with the question of how the system organizes its own closure, its own social autonomy, and its own immunity in fulfilling its function.

Legal reasoning uses the distinction between norms and facts, be-

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21 Critique requires a *Reflexionsmedium* or an imaginary space in which identity and difference, unity and duality join in the attempt to improve on the work of art—or the work of theory. *See* WALTER BENJAMIN, *Der Begriff der Kunstkritik in der deutschen Romantik*, in 1 GESAMMELTE SCHRIFTEN 7 (Hermann Schweppenhäuser ed., 1974).

22 For further elaboration, see NIKLAS LUHMANN, A SOCIOLOGICAL THEORY OF LAW 22-49 (1985).

23 *See, e.g.*, JÜRGEN HABERMAS, LEGITIMATION CRISIS (Thomas McCarthy trans., 1977) (1973).

tween normative and cognitive expectations. It has to know in which respects it is supposed to learn (did somebody kill another woman?) and in which respects not (should she have been killed?). Legal reasoning would not get along very well by confusing these questions. In this sense, the system is normatively closed and cognitively open at the same time.[24] But the legal system has to anticipate (that is, to know in advance of every specific operation) which norms are legal norms and which norms are simply opinions in its environment, for example, beautiful images of economic *and* ecological rationality. In other words, the legal system has to organize the legal validity of norms, validity represented as a circulating symbol, moved by legislation and contract, and with continually shifting contents. The recursive autopoietic network of reproducing normative expectations with reference to normative expectations uses the distinguishing mark of legal validity. Acceptable legal reasoning has to restrict itself to legal norms (including norms of moral standards referred to by legal norms, professionally sound practice, and so on.[25] This is how closure is recognized—or "observed"—in the system (every legal theorist will immediately recognize H.L.A. Hart's secondary rules of recognition).[26] However, this does not quite satisfactorily explain how closure is produced in the first place.

The structure that actually organizes the autopoiesis of the system as an unavoidable outcome of its own operations is the system's binary code; that is, the continuous necessity of deciding between legal right and wrong. This code is a strictly internal structure. To declare something illegal does not mean that it belongs to the environment of the system. We have to differentiate the distinction between self-reference and external reference on the one hand, and legal and illegal on the other.[27] Moreover, the code of the system is not a norm; this assumption would only lead to the paradoxical question of whether the distinction between legal and illegal is *itself* legal or ille-

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[24] I share some of the objections of Arthur J. Jacobson, *supra* note 13, against this highly reduced formula, and the text tries to elaborate on the problems as I see them. But I would maintain that this is not a question of explaining or organizing dynamism. Closed systems are inherently temporalized, dynamic systems. They look for occasions, irritations, opportunities in their environment. But even the classification as occasion, irritation, opportunity (e.g., as a complaint) is an internal classification and not something which exists independently of the system in its environment.

[25] *See* NEIL MACCORMICK, LEGAL REASONING AND LEGAL THEORY (1978) (proposing for this refined positivistic approach the brand name of "institutional theory of law").

[26] *See* H.L.A. HART, THE CONCEPT OF LAW (1961).

[27] Even epistemology has to recognize that problems of reference should not be confused with problems of truth and that there are no definitional links between the concepts of reality, meaning, and truth as the Vienna circle presupposed.

gal. The code is simply a rule of attribution and connection. If the question arises whether something is legal or illegal, the communication belongs to the legal system, and if not then not. There is no further sanction and no natural or societal sorting of topics and communications as belonging or not to the legal system; it is a purely factual matter. The question of legality is or is not picked up in communication,[28] and by this very fact the communication takes part in the recursive network of legal communication.[29] Nobody, not even the legal system, can refuse to ask the question. It may, of course, be possible to avoid asking the question by suppressing communication. The legal system can expand or shrink according to societal violence; but this does not change the rule of attribution and connection, it simply changes its range of application.

Identifying itself by its binary code, and distinguishing itself from its environment by the specificity that code, the legal system knows of no fundamental norm (*Grundnorm*) representing its unity within the societal system. There is no way to introduce the unity of the system into the system. The system is an open-ended, ongoing concern structurally requiring itself to decide how to allocate its positive or negative value. The bifurcation necessitates decisions and thereby further operations, and decisions require the construction of normative rules (programs) to connect them in a network for reproducing decisions. Norms, then, are purely internal creations serving the self-generated needs of the system for decisional criteria without any corresponding "similar" items in its environment. Nothing else is meant by "autopoiesis." Historically, there is no beginning except an always renewed reconstruction of the past.[30] Logically, there are no apriorities, but simply a circular, reciprocal conditioning of the code and programs. Only the programs have a normative status and convey a normative quality to concrete expectations. They serve the function of the sys-

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28 This, of course, is not to say that it is simply a matter of chance. We can also recall that some societies allow for asking the *quæstio iuris* even in the context of highly political issues. The Roman republic was famous for that.

29 *See* Niklas Luhmann, *Communication About Law in Interaction Systems, in* ADVANCES IN SOCIAL THEORY AND METHODOLOGY: TOWARD AN INTEGRATION OF MICRO- AND MACRO-SOCIOLOGIES 234 (K. Knorr-Cetina & V. Cicourel eds., 1981).

30 At this point we meet the "historical school," and in particular, Friedrich C. von Savigny, for whom a conscious formulation of legal rules is only possible when such a rule can be found in practice. FRIEDRICH C. VON SAVIGNY, SYSTEM DES HEUTIGEN RÖMISCHEN RECHTS (SYSTEM OF MODERN ROMAN LAW) 14 (1840). We would say that the autopoietic closure of the legal system is only possible if sufficient preadaptive advances, experiences in handling conflicts, model cases, etc. are available. For the common law, see SIR MATTHEW HALE, A HISTORY OF THE COMMON LAW OF ENGLAND (photo. reprint 1987)(1713) (decoupling the question of the validity of the law and the legitimacy of the Norman conquest as its origin).

tem. The closure of the system is produced by realizing the structural difference of the code and programs, and this difference alone gives legal norms a distinctive flavor.

Normative closure means, above all, that morality as such has no legal relevance—neither as code (good/bad, good/evil), nor in its specific evaluations. The law provides ample space for immoral behavior. *Non omne quod licet honestum est.*[31] This is not simply a moral weakness of the law, but a condition of free and unrestrained development of moral communication. Such was the common opinion in the eighteenth and nineteenth centuries, and it was the unavoidable consequence of religious and moral pluralism produced by the printing press. Of course, this does not prevent the legal system from incorporating moral constraints as legal constraints; but this has to be done within the system and has to be checked by the usual references to legal texts, precedents, or rulings that limit the realm of legal argument.[32] Even theories that dare to assert that all legal decisions in so-called "hard," and even "easy," cases need a moral justification maintain that looking for "grounds drawn from outside the law" is, "indeed, . . . *required* by law."[33] Whatever import one claims for external references, these references are aspects of internal operations. The system has to take care of itself.

IV.

The daily problem of closed social systems is how to connect internal and external references by internal operations. At the operational level this problem is solved by distinguishing norms from facts; that is, in terms of internal structures, distinguishing normative from cognitive expectations. The distinction of normative and cognitive expectations, and this holds true for any distinction, has to be *made;* in our case, it has to be made *by the legal system.* It cannot be found in the natural or created world. It is not a "categorical" property of the world. This means that even "facts" that are relevant for the legal system are not facts for everybody.[34] Facts are constructions, statements about the world, and careful sociological investigations show that scientific facts and facts which serve as components of legal or

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[31] DIG. 50.17.144 (Paulus, Ad Edictum 62) ("Not everything which is lawful is honorable.")

[32] *See* Neil MacCormick, *Why Cases Have Rationes and What These Are, in* PRECEDENT IN LAW 155, 166-182 (Laurence Goldstein ed., 1987).

[33] David Lyons, *Justification and Judicial Responsibility,* 72 CAL. L. REV. 178, 186, 188 (1984) (introducing further distinctions to "make this conclusion less paradoxical.").

[34] And we may add, it may appear so at the level of first order observers, but not for us, not for observers observing these observers.

political-administrative decision making differ in remarkable ways.[35] In other words, knowledge has different "credibility profiles"[36] inside and outside the legal system. Legal facts are made to fit the legal framework; they have to facilitate as far as possible the deductive use of legal norms. They have to support the presentation of legal validity by conveying the impression that, given the rules, the decision follows from the facts of the case. They have to be certified facts.[37]

At the level of juridical doctrine, the same problem can be formulated in terms of concepts and interests. We are used to thinking of analytic jurisprudence and interest-orientation as two different, competing schools of legal thought. The interest approach was born, at least in Germany, by inventing an opponent called *Begriffjurisprudenz* (Conceptual Jurisprudence).[38] Roscoe Pound copied this polemical style.[39] The tribal rules of the academic system favor such distinctions of schools and controversies. The legal system operates under different conditions of autopoietic reproduction. It has to combine internal and external references and, to the extent that generalizations are useful, may refer to well-tried concepts and to well-known interests. There is no contradiction in using both references simultaneously. Concepts articulate the self-referential aspects of legal decisions; interests, on the other hand, are environmental facts to be taken as given. The task of the system as formulated by the system consists of distinguishing interests protected by the law from interests to be suppressed and combatted.[40]

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35 *See* EXPERT EVIDENCE: INTERPRETING SCIENCE IN THE LAW (Roger Smith & Brian Wynne eds., 1989) [hereinafter EXPERT EVIDENCE].

36 Brian Wynne's term. Brian Wynne, *Establishing the Rules of Laws: Constructing Expert Authority, in* EXPERT EVIDENCE, *supra* note 35, at 52.

37 For a very different handling of certainty/uncertainty questions within the system of science, see Brian L. Campbell, *Uncertainty as Symbolic Action in Disputes Among Experts*, *supra* at 429; Susan L. Star, *Scientific Work and Uncertainty*, 15 SOC. STUD. OF SCI. 391 (1985).

38 Today we are well aware that this was, to a large extent, fictional history. *See, e.g.*, ULRICH FALK, EIN GELEHRTER WIE WINDSCHEID: ERKUNDUNGEN AUF DEN FELDERN DER SOGENANNTEN BEGRIFFSJURISPRUDENZ (1989).

39 *See* Roscoe Pound, *Mechanical Jurisprudence*, 8 COLUM. L. REV. 605 (1908).

40 *See* 3 ROSCOE POUND, JURISPRUDENCE (1959). He writes: "A legal system attains the ends of the legal order (1) by recognizing certain interests individual, public, and social; (2) by defining the limits within which those interests shall be recognized and given effect through legal precepts . . . ." *Id.* at 16. So some (or almost all?) interests are left without protection, or are even repressed. This positive/negative distinction can, of course, not be deduced from the interests as such, for even bad interests are interests. A theory which looks exclusively at interests cannot give good reasons for this distinction except by saying that the legal system has an interest in distinguishing protected and unprotected interests. *See* PHILIPP HECK, *Gesetzesauslegung und Interessenjurisprudenz* (1914), *reprinted in* PHILIPP HECK, DAS PROBLEM DER RECHTSGEWINNUNG 102 (1968); BENJAMIN CARDOZO, THE NATURE OF THE JU-

This distinction cannot be derived from the environment of the system, nor can it be "seen" as an inherent quality of systems. The distinction must be constructed by the internal operations. This is not to say that the dividing line separating protected from suppressed interests can be drawn arbitrarily. The guarantee of "justice" is not the correspondence with external qualities or interests, but the consistency of internal operations recognizing and distinguishing them. It is this requisite of consistency which, under conditions of sufficient complexity, leads to the elaboration of concepts.

Concepts are also internal operators referring to *internal* differences, or at least this has to be presupposed. Even if a concept—like the *bona fides* of the Romans—has moral connotations in everyday language, these do not become part of the law except by explicit reference. In other words, *bona fides* is not a "source of law."[41] The same holds true for terms that are used in legal texts but also have scientific meanings (often more than one) outside the law. If a concept is used explicitly as citation, it refers to environmental norms, rules, and customs as facts that must be proven.

At the level of single cases, there may be a choice between giving priority to the urgency of interests or to the purity of legal concepts, but the system as such cannot choose in this way. If its decisions are presented as evaluations of interests, this amounts to understating conceptual issues and neglecting for the time being the control of consistency. If the reasons given are conceptual ones, this will be a disguised way of favoring or disfavoring certain interests more than others. In theoretical terms, the ultimate problem always consists of combining external and internal references, and the real operations which produce and reproduce such combinations are always internal operations. *Nothing else is meant by closure.*

V.

To repeat again and again this trivial point, closure does not mean empirical isolation. Closure is a highly selective, improbable, artificial achievement—not in the sense of intentional design, but as an outcome of evolution.

The emergence of closed systems requires a specific form of relations between systems and environments; it presupposes such forms

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DICIAL PROCESS 112 (1921) ("One of the most fundamental interests is that the law shall be uniform and impartial.").

[41] *See* ANTONIO CARCATERRA, INTORNO AI BONAE FIDEI IUDICIA (1964); Yan Thomas, *La langue du droit romain: Problèmes et méthodes,* 19 ARCHIVES DE PHILOSOPHIE DU DROIT 103 (1974) (asking for more refined semiotic analyses of this question).

and is a condition of their possibility as well. The theory of "open systems" describes these forms with the categories of *input* and *output.* This model postulates a causal chain in which the system itself serves as the connecting part linking inputs and outputs. The theory of autopoietic systems replaces the input/output model with the concept of *structural coupling.*[42] It renounces the idea of an overarching causality (admitting it, of course, as a construct of an observer interested in causal attributions), but retains the idea of highly selective connections between systems and environments.

The structural coupling of system and environment does not contribute operations (or any other components) for the reproduction of the system. It is simply the specific form in which the system presupposes specific states or changes in its environment and relies on them. Walking presupposes the gravitational forces of the earth within very narrow limits, but gravitation does not contribute any steps to the movement of bodies. Communication presupposes awareness states of conscious systems, but conscious states cannot become social and do not enter the sequence of communicative operations as a part of them; they remain environmental states for the social system.[43] Structural couplings are forms of simultaneous (and therefore, not causal) relations. They are analogical, not digital, coordinations.

The system in its normal dealings does not observe its structural couplings, but it has to contend with perturbations, irritations, surprises, and disappointments channeled by its structural couplings. It must also assimilate and accommodate (Piaget's terms!) such ambiguities. But perturbations are purely internal constructs because they appear only as deviations from expectations; that is, in relation to the structure of the system. The environment does not contain perturbations or anything that in a semantical sense is similar to them. Nor is there any transmission of perturbations from the outside into the system. The twin concepts of closure and structural coupling exclude the idea of information "entering" the system from the outside. Even in the case of cognitive expectations this is impossible because selections of information are always internally constructed, and cognitive expectations are nothing but specific forms to be prepared for irrita-

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[42] *See* HUMBERTO R. MATURANA, ERKENNEN: DIE ORGANISATION UND VERKÖRPERUNG VON WIRKLICHKEIT: AUSGEWÄHLTE ARBEITEN ZUR BIOLOGISCHEN EPISTEMOLOGIE 143-45, 243-44, 251-52 (1982) [hereinafter ERKENNEN]; HUMBERTO R. MATURANA & FRANCISCO VARELA, EL ARBOL DEL CONOCIMIENTO 49-53, 64, 154-55 (1984).

[43] *See* NIKLAS LUHMANN, *Wie ist Bewusstsein an Kommunikation beteilgt?, in* MATERIALITÄT DER KOMMUNIKATION 844 (Hans Gumbrecht & K. Ludwig Pfeiffer eds., 1988); NIKLAS LUHMANN, DIE WISSENSCHAFT DER GESELLSCHAFT (1990).

tions (surprises, unpredictabilities).[44] But without structural coupling there would be no perturbation and the system would lack any chance to learn and transform its structures. Hence, structural coupling, together with sufficient internal complexity, is a necessary precondition for building up regularities[45] to construct order from noise or redundancy from variety. Communication never becomes thought, but without being continually irritated by communication, an individual would not become a socialized individual; it[46] would remain dependent upon its flow of perceptions, that is, dependent upon structural couplings and internally constructed regularities of another type.

In this way, structural couplings provide a continuous influx of disorder against which the system maintains or changes its structure. Memory depends upon this tendency towards entropy. Memory is not a storage of past facts (the past can never be present), but a form for mediating order and disorder—very frequently by forgetting, in other cases by constructing a spatial or temporal order to dissolve incompatibilities. However, this would not be possible if structural couplings did not exclude most of the environmental facts from immediate relevance. Structural coupling presupposes and organizes decoupling. Communication (which is to say, society) is coupled to consciousness, but not to the immense mass of physical, chemical, and biological facts. These facts can prevent communication and they can destroy it, but they cannot irritate communication. In this sense, coupling has to be conceived as a difference, as a form with two sides: an internal side that admits irritation and an external side to which the system remains indifferent. Structural couplings arise with systems; they are not physical, chemical, biological facts that exist before systems emerge (although these facts as such preexist as preadaptive advances for the emergence of systems).

Applying this complex conceptual apparatus at the level of societal differentiation, and in particular to the differentiation of a legal system, we immediately see the structural coupling of social commu-

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[44] This responds to a remark of William Evan, that the theory of autopoietic systems does not explain how information (expectations, demands) is transmitted to the legal system. WILLIAM M. EVAN, SOCIAL STRUCTURE AND LAW: THEORETICAL AND EMPIRICAL PERSPECTIVES 42 (1990). There is normal communication as the operation of the societal system, to be sure, but no contribution of external sources to what the closed system can handle as information.

[45] Francisco J. Varela, *On the Conceptual Skeleton of Current Cognitive Science, in* BEOBACHTER: KONVERGENZ DER ERKENNTNISTHEORIEN? 13 (1990), postulates a modular (non-hierarchical) order of information processing as an additional prerequisite. *See also* Joseph A. Goguen & Francisco J. Varela, *Systems and Distinctions: Duality and Complementarity*, 5 INT'L J. GEN. SYS. 31 (1979).

[46] It = the system, whether he or she.

nication reproducing society on the one hand, and special legal meanings as normative projections claiming legal validity—the legal code and the special programs (laws, regulations, contracts)—on the other. Communication is the "domain"[47] in which the differentiation of a legal system becomes possible. This does not (and cannot!) require a communication *of* the legal system *to* the society as a relation between sender and receiver. The legal system cannot communicate as a unity and the society has no address. However, by operating within its own boundary, the legal system reproduces itself and the societal system without making this simultaneity a topic of communication, without using it as an argument in pleading before the court, and, of course, without needing any "legitimation" by the societal system. It happens as an unavoidable fact *because* (not although!) the legal system reproduces itself under the condition of operational closure.

VI.

Given the fact of the structural coupling of the societal system and its legal system, further structural couplings can evolve between the legal system and other functional subsystems. All subsystems use the same domain, "communication."[48] They could not be subsystems of the societal system on the basis of other types of operations—say biological or conscious ones—but this does not solve all the problems of coupling and decoupling which arise in the relations between the subsystems. In traditional societies we find devices to represent social order as relations between susbsystems, for example, as relations of center and periphery, city and country; or as relations of rank between castes or estates. The transition to modern society dissolved this order without replacing it—Foucault cites a "loss of representation" occurring in the eighteenth century.[49] Under the regime of functional differentiation, the societal system loses its integrative ca-

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[47] ERKENNEN, *supra* note 42, at 154.

[48] This statement excludes theories which oppose a semantic level of communication and macro-economic structures. Authors who use this or similar distinctions for rejecting the idiom of autopoiesis should be asked to clarify their distinction at an adequate conceptual level. *See, e.g.*, Peter Nahamowitz, *Autopoiesis oder ökonomischer Staatsinterventionismus?, in* 9 ZEITSCHRIFT FÜR REHTSSOZIOLOGIE 36 (Erhard Blankenburg et al. eds., 1988). It is, of course, not acceptable to rush into "empirical" arguments without sufficient explication of the theoretical description of the issue, because this will only lead to talking about different objects. The critics would also have to answer the questions about whether they can think of social systems without the capacity of self-transcendence or re-entry, without self-observation and self-description, and the kind of operation upon which such systems would be based. *See infra*, Part I.

[49] MICHEL FOUCAULT, LES MOTS ET LES CHOSES: UNE ARCHÉOLOGIE DES SCIENCES HUMAINES 229-61 (1966).

pacity. Reduced to its mechanism of structural coupling, it continues to autopoietically reproduce itself by communication. But language as such contains and spreads the possibility of refusing all kinds of proposals. Under these conditions, the social order requires autopoietic closure, self-organization, and autonomy of the most important function systems as well as the development of new forms of structural coupling for the relations between these systems.

The economic system depends on the codes of property and money. Without a clear divide between having and not having property rights, no transaction would be possible. Nevertheless, the economic and the legal consequences of a transaction are completely different because they occur in different systems in different recursive networks under different criteria and concrete conditions. The economic and the legal systems are and remain separate, and both operate under the condition of operational closure; but this needs a specific mechanism of structural coupling, above all in the form of property and contract.[50]

There is much historical evidence that, beginning in the fourteenth century, the legal system adapted to these requirements and enlarged—slowly, and with many scruples—the permitted degrees of freedom in property and contract. The core meaning of property has included since Bartolus,[51] in addition to defense and use and enjoyment (*usus, fruitio*), the right of disposal (*dispositio*). The same improbabilities deform and generalize the institution of contract; contract was the most important legal invention of Roman civil law, providing a legal instrument not only for solving actual conflicts, but for regulating and avoiding them. During the transition from stratification, based on real estate, to functional differentiation, the society created needs, motives, and legitimation for enlarging the scope of employing property and the scope of possible contracts with legal protection. The limitations of access to courts which the traditions of civil law and common law arranged under the names of *actio* and writ vanished, and finally—in England only in the nineteenth century—contracts became legally valid, even without "consideration," on the

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[50] Other important requisites include corporate law—which, during the eighteenth & nineteenth centuries, became independent from political privileges and monopolies—and patent law, and, last but not least, the banking system. The latter provided a sufficient separation and recoupling of money and other (real) property for the credit mechanism which the economy needed: the capacity to pay even without sufficient wealth.

[51] *See* DIETMAR WILLOWEIT, *Dominium und Proprietas: Zur Enwicklun des Eigentumsbegriffs in der mittelalterlichen und neuzeitlichen Rechtwissenschaft*, 94 HISTORISCHES JAHRBUCH DER GÖRRESGESELLSCHAFT 131 (1974). Bartolus was a twelfth century Italian jurist and commentator on Roman law. *See generally* JOSEPH H. BEALE, BARTOLUS ON THE CONFLICT OF LAWS (1914).

basis of private will.[52]

Modern concepts of property and contract do not integrate or even de-differentiate the legal and economic systems. As mechanisms of structural coupling, they organize the reciprocal irritation of these systems and influence, in the long run, the natural drift of structural developments in both systems. In particular, the regulatory state presupposes this connection and uses it as a medium of political intervention into both systems by limiting once again the degrees of freedom for using property and contract.

If we look for a parallel mechanism coupling the legal system and the political system, we find it in the form of constitutions—in the modern sense—emerging from revolutionary movements during the second half of the eighteenth century.[53] The historical innovation, the mutation of legal forms, had been occasioned by concrete political circumstances and by the possibilities they provide for an instrumental use of conceptual variations.[54] This has been favored by the modern concept of the "state," which suggests a unity of political and legal "sovereignty." This unity makes it difficult to see the distinction, but the political system and the legal system are separate, operationally closed, autopoietic systems. A political operation as such never has legal relevance if not endowed with it by the legal system and vice versa. Otherwise no political discourse, no political bargaining, and no policy planning would be possible without immediate legal effects. The constitution separates the systems and provides for their structural coupling. The ultimate paradoxes and tautologies of the legal system (that law is whatever the law arranges to be legal or illegal) can be unfolded by reference to the political system (for example, the political will of the people giving itself a constitution), and the paradoxes and tautologies of the political system (the self-inclusive,

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[52] For the common law, see PATRICK S. ATIYAH, THE RISE AND FALL OF FREEDOM OF CONTRACT (1979); MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW, 1780-1860 (1977); MAX RHEINSTEIN, DIE STRUKTUR DES VERTRAGLICHEN SCHULDVERHÄLTNISSES IM ANGLO-AMERIKANISCHEN RECHT (1932); ALFRED W.B. SIMPSON, A HISTORY OF THE COMMON LAW OF CONTRACT: THE RISE OF THE ACTION OF ASSUMPSIT (1975); EIKE VON HIPPEL, DIE KONTROLLE DER VERTRAGSFREIHEIT NACH ANGLO-AMERIKANISCHEM RECHT: ZUGLEICH EIN BEITRAG ZUR CONSIDERATIONSLEHRE (1963). On the continent, the *nudum pactum* was recognized earlier and the problem was to reduce the amount of state intervention into contracts in the context of "mercantilistic" policies. *See* DIETER GRIMM, *Soziale, wirtschaftliche und politische Voraussetzungen der Vertragsfreiheit, in* RECHT UND STAAT DER BÜRGERLICHEN GESELLSCHAFT 165 (1987).

[53] For a more extensive treatment, see Niklas Luhmann, *Verfassung als evolutionäre Errungenschaft,* 9 RECHTSHISTORISCHES J. 176 (1990).

[54] *See, e.g.,* CONCEPTUAL CHANGE AND THE CONSTITUTION, (Terence Ball & John G.A. Pocock eds., 1988); POLITICAL INNOVATION AND CONCEPTUAL CHANGE (Terence Ball et al. eds., 1989).

binding, sovereign power) can be unfolded by reference to the positive law and by supercoding the legal system with the distinction of constitutional and unconstitutional legality.[55]

The institutional justification for constitutions cannot be reduced to either a political or a legal function, and it does not lie in the value-laden language of the constitution itself, nor in the value of its values. The constitution serves the dual function of including and excluding reciprocal perturbations of political and legal operations. Its two-sided form of including and excluding influence maintains the separation of the systems and allows for separate autopoietic reproduction without any confusing overlap. It also characterizes the ways in which the legal system (and on the other side, the political system) avoids isolation (which means entropy) and constructs on its internal screen what can serve within the system as information. As previously discussed, the system operates as a non-self-transcending system on the level of its operations, and as a self-transcending system on the level of its observations; this in spite of the fact that observations *are* operations.

To fully understand this apparently contradictory, even paradoxical, statement, it is necessary to take time into account. Operations are events without duration; they vanish as soon as they appear. Observed as single events, they can participate in different systems. A payment can be at the same time (but *only* at the same time) the fulfillment of a contractual obligation in the legal system and part of an economic transaction which transfers the capacity to make further payments in the economic system. The same holds true for an act of legislation which may have both political and legal relevance. An observer may identify these aspects as one event and may even find himself unable to see two different operations. The systems, however, that generate their own elementary operations also need their own recursive networks and connections with earlier and later operations within the same system in order to construct meaningful identities. They condense and confirm identities for repetitive use within the same system[56] and, for them, preconditions and consequences of events differ completely according to system reference. Since auto-

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[55] For the decisive invention of the term "unconstitutional" during the eighteenth century, see Gerald Stourzh, *Constitution: Changing Meanings of the Term from the Early Seventeenth to the Late Eighteenth Century, in* CONCEPTUAL CHANGE AND THE CONSTITUTION, *supra* note 54, at 35. *Cf.* GERALD STOURZH, WEGE ZUR GRUNDRECHTSDEMOKRATIE: STUDIEN ZUR BEGRIFFS—UND INSTITUTIONENGESCHICHTE DES LIBERALEN VERFASSUNGSTAATES 50-74 (1989).

[56] For further elaboration, see NIKLAS LUHMANN, *Identität—was oder wie?, in* 5 SOZIOLOGISCHE AUFKLÄRUNG 14-30 (1990).

poietic systems are temporalized systems depending on self-generated dynamic forms of stability,[57] they necessarily differentiate and recognize their own operations by temporal orientations. Therefore, any observer who cares for the perspective of the system itself—of course, there can be other observers with other frames and interests—cannot cross-identify events over boundaries.

VII.

One of the most frequent objections to the theory of autopoietic systems in general, and its application to legal systems specifically, states that this theory—if it is a theory at all[58]—does not care for empirical verification.[59] This criticism needs two comments. First, the repertoire of empirical methods in present day sociology is very limited and completely inadequate for objects like the legal system; that is, self-observing objects with highly structured complexity. Restricting the access to objects by available empirical methods—and I take this denotation in its usual meaning—would simply mean not seeing the society and its legal system as it contructs and presents itself. It requires going out of the market and leaving the business to others—to mass media and to sociological writers. This should not be the last word. Secondly, one can look for new combinations of (1) well-known and uncontroversial (maybe obvious or even trivial) facts; and (2) theoretical descriptions which present the obvious in unusual illumination. The distinction between operational closure and structural coupling is one of these theoretical instruments. In other words, given the structure of its domain, sociology cannot reduce its concept of social reality to self-created data. We may even doubt whether there is any correlation between empirical research and social reality, except by the methodologically unguided "active interpretation" of results.

If these considerations suggest (to repeat, for the present situation) a primacy of refined theoretical research, they do not exclude

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[57] It is a frequent, but very crude and uninformed, error to say that the theory of autopoietic systems does not have the possibility of taking dynamism (on the level of operations) and change (on the level of structures) into account. On the contrary, the theory has no place for any kind of non-dynamic, unchangeable, "essential," "substantive" components.

[58] Within the context of American sociology, this level of theorizing is sometimes called "metatheoretical"—as in the section title under which a paper of the present author is printed, in DIFFERENTIATION THEORY AND SOCIAL CHANGE: COMPARATIVE AND HISTORICAL PERSPECTIVES (Jeffrey C. Alexander & Paul Colomy eds., 1990). Seen from a European perspective, this reflects the rather modest level of theoretical aspirations in present day American sociology. *Cf.* DAG OSTERBERG, METASOCIOLOGY: AN INQUIRY INTO THE ORIGINS AND VALIDITY OF SOCIAL THOUGHT (1988).

[59] *See, e.g.*, EVAN, *supra* note 44, at 46.

empirical research. We have outlined a hypothesis indicating relations between a transition from stratification to functional differentiation and the invention of new or the reformulation of old mechanisms of structural coupling during the transition period. There could be many similar suggestions, for example, concerning the forms of deparadoxification of the legal system's self-description[60] or the replacement of the unified notion of *iurisdictio* by the separation and circular recombination of legislation and jurisdiction as a condition for the transition from natural law to positive law as the dominant form of self-validation of the legal system. There could be many empirical projects exploring the sensitivity (or limits thereon) of the autopoiesis of the legal system to social and political changes.[61] There are no fundamental incompatibilities between the theory of self-referential systems and empirical research, but there is an uncomfortable tension between theoretical conceptions and the present possibilities of empirical research. Instead of rejecting theory as unverifiable, critics should see the insufficiencies on both sides.

VIII.

Finally, I return to the concept of operational closure. Focussing on the operation that autopoietically reproduces the system as the network which reproduces its operations offers new insights with respect to the relation of structure and process. An autopoietic system does not consist of two different kinds of entities, namely structures and processes. It is not composed of two different kinds of matter or substance. The enzymes of the living cell are at the same time outcomes of production, productive factors, and programming factors which organize the reproduction of the cell. The human mind does not consist of two different kinds of entities which have been called—by the Logic of Port Royal[62] and by Locke,[63] as well as their followers—ideas and representations. There are not two different qualities of a communicative system, *langue* and *parole,* as the linguistic theory of Saussure would have it.[64] Finally, it is questionable what it means to

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60 *See* Niklas Luhmann, *The Third Question: The Creative Use of Paradoxes in Law and Legal History,* 15 J. L. & SOC'Y 153 (1988).

61 *See, e.g.,* MICHAEL HUTTER, DIE PRODUKTION VON RECHT: EINE SELBSTREFERENTIELLE THEORIE DER WIRTSCHAFT, ANGEWANDT AUF DEN FALL DES ARZNEIMITTELPATENTRECHTS (1989).

62 ANTOINE ARNAULD & PIERRE NICOLE, LA LOGIQUE OU L'ART DE PENSER (1972) (1662).

63 *See* JOHN LOCKE, AN ESSAY CONCERNING HUMAN UNDERSTANDING (Peter H. Nidditch ed., 1975).

64 *See* F. DE SAUSSURE, *supra* note 5.

say that a legal system consists of "norms and activities."[65] Rather, the system uses the same type of operation—be it biochemical replication, thought, or communication—in the dual function of (1) producing subsequent operations; and (2) confirming or changing the structure used to select the next operation. In the sense of Heinz Von Foerster, it is a non-trivial, self-referential machine—a machine that uses every operation to construct itself anew.[66] As observers, and for analytic purposes, we may distinguish these two functions of producing operations and using, confirming, or changing structures. In reality, these are only two aspects which necessarily require each other. In a complex system you cannot fix the next operation without selecting it, you cannot select without narrowing the choice in the first place, and you cannot restrict the possibilities at hand without accepting frames, as some people say, or structures, or in the case of social and legal systems, expectations.

Operational closure, then, means that a system has to rely on all-purpose operations of a specific type (and, of course, not anything goes!). It has to use the same type of operation for confirming and changing (or simply forgetting) structures, and each operation is always determining the next operation. It is simply a prime fact that the autopoiesis goes on and on. There is no operation available that could stop it, because all operations gain their own unity by producing subsequent operations. The system may select, condense, confirm, change, or forget structures—but all this is a way to continue its own autopoiesis. Of course, this does not prevent destruction, but it goes on as long as it goes on. If a system can organize structural changes, it can increase its adaptive capacity, but also its maladaption. Under a condition of sufficient complexity, a system can differentiate procedures for changing structures, and structures for organizing procedures for changing structures. This all requires and uses the type of operation that produces and reproduces the unity of the system.

I conclude with a trivial remark: There is no conservative bias in such a theory. The system has no preference for maintaining itself, there is simply no choice. It can continue by confirming or by changing its structure if operations are available to focus on such an outcome; otherwise it just happens. An observer (which may be the

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[65] *See* TORSTEN ECKHOFF & NILS K. SUNDBY, RECHSSYSTEME: EINE SYSTEMTHEORETISCHE EINFÜHRUNG IN DIE RECHTSTHEORIE 41 (1988). I suppose that most legal theorists would tend to accept this without giving further thought to what it could mean to say "and"—norms *and* activities.

[66] *See* Heinz Von Foerster, *Principles of Self-Organization—In a Socio-Managerial Context, in* SELF-ORGANIZATION AND MANAGEMENT OF SOCIAL SYSTEMS: INSIGHTS, PROMISES, DOUBTS, AND QUESTIONS 2, 8-10 (Hans Ulrich & Gilbert J.B. Probst eds., 1984).

system itself) may or may not discover that structures have changed over time. He may see that intentional changes are conservative with respect to the frames, values, procedures, and constitutions which are needed for, and confirmed by, intentional changes. An observer may use the distinction of static and dynamic systems for himself. Systems theory, however, will advise him that this scheme is a crude simplification. Autopoietic systems are systems organizing dynamic stability. If an observer does not heed to this advice, and his own autopoiesis does not force him to do so, it would be advisable to change the topic of interest and observe the observer.