

Jac Christis

Luhmann's theory of knowledge: beyond realism and constructivism?

Zusammenfassung: In diesem Aufsatz wird der grammatikalische Realismus Wittgensteins verwendet für eine Klärung der Diskussion, die Luhmann mit metaphysischen Realisten und skeptischen Idealisten führt. Luhmann betont (gegen die metaphysischen Realisten) mit Recht, daß die Bedeutung von Begriffen nicht durch ihre Referenten bestimmt wird. Gleichzeitig aber hält er (gegen die skeptischen Idealisten) mit Recht daran fest, daß diese ‚Autonomie der Bedeutung‘ eine notwendige Bedingung ist, sowohl für externe Referenz als auch für die Anwendung von Wahrheitsprädikaten auf empirische Aussagen. Luhmann teilt die in diese Position enthaltene Trennung von Bedeutung, Referenz und Wahrheit mit den grammatikalischen Realismus. Wenn er ausspricht, daß wir keinen direkten Zugang zur Außenwelt besitzen und diese deshalb unbekannt bleibt, überschreitet er jedoch Sinnngrenzen. Der Aufsatz zeigt, daß diese Überschreitung unnötig ist. Was bleibt, ist eine Position die sowohl metaphysisch-realistische Grundlagen als auch konstruktivistische Exzessen vermeidet.

In the words of Rasch (1998), Luhmann seems to be involved in a continuous two-front war with dogmatic realists and sceptical idealists. In discussion with realists he tells them that we do not have direct access to the external world, that knowledge is a self-referential process, and that knowledge is about an external world which will continue to be unknown:

There is an external world ... but we have no direct contact with it. Without knowing, cognition could not reach the external world. In other words, knowing is only a self-referential process. Knowledge can only know itself, although it can – as if out of the corner of its eye – determine that this is only possible if there is more than only cognition. Cognition deals with an external world that remains unknown and has to, as a result, come to see that it cannot see what it cannot see (Luhmann 1990a, 64-65).

Rather than a knowledge-independent reality, the reality which we know is a reality constructed by knowledge, by its distinctions or concepts¹: “Cognitively all reality must be constructed by means of distinctions and, as a result, remains construction” (Luhmann 1990a, 50). With its unknowable world, this looks like a Kantian form of idealism. Scepticism seems also to be involved, for, whether

¹ According to Luhmann, concepts are distinctions, although distinctions need not be concepts. Only ‘Sinnsysteme’, that is, psychic and social systems, use distinctions that are concepts. Concepts need not to be linguistically articulated, although ‘Sinnsysteme’ often use language to express their thoughts or articulate their communications.

or not the external world exists is a hypothesis that cannot, in Luhmann's view, be confirmed or denied:

If a knowing system has no entry to its external world it can be denied that such an external world exists. But we can just as well – and more believably – claim that the external world is as it is. Neither claim can be proved; there is no way of deciding between them (Luhmann 1990a, 67).

Luhmann's constructivist side seems to be based on the thesis that knowing systems have no (direct) access to, contact with or entry into the external world, which therefore remains unknown. Yet, in Luhmann's view, this constructivism should not be understood as a form of anti-realism, idealism, relativism, subjectivism, solipsism, or scepticism (Luhmann 1990b, 100). Thus, in discussion with sceptical idealists Luhmann points out:

- that the realism of constructivism is beyond dispute because it is always concerned with constructions of real operating systems (Luhmann 1990c, 9);
- that his constructivism must be viewed as a realistic theory of knowledge, that uses empirical arguments from brain research (Luhmann 1990c, 15);
- that there can be no question of pure self-reference: “epistemology primarily concerns the relationship between knowledge and object, that is, knowledge's reference to reality. Pure self-reference in this case would mean: the real is what knowledge indicates as real. This answer is and remains unsatisfactory” (Luhmann 1995, 479);
- that constructivism cannot assume Kantian forms with its distinction between a phenomenal, knowable, and noumenal, unknowable world: “In no way does this mean, however, that somewhere in the world there are states of affairs one cannot know, above all not in the old sense of the essence of nature's being secret” (Luhmann 1990a, 76);
- that there are self-referential systems, that is, “systems that have the ability to establish relations with themselves and to differentiate these relations from relations with their environment” (Luhmann 1995, 13), that this self-reference is “independent of the cut of observation by others” (1995, 33), and “that reality is also structured circularly, independently of knowledge” (Luhmann 1995, 615);
- that a distinction has to be made between the statements of systems theory and the independent things they refer to: “But, at least in systems theory, they [its statements] refer to the real world. Thus the concept of system refers to something that in reality is a system and thereby incurs the responsibility of testing its statements against reality” (Luhmann 1995, 12).

When debating with a realist, Luhmann is therefore more constructivist (stressing the self-referential moment of knowledge) than he appears to be when he is in discussion with a sceptical idealist (insisting on the external referential

moment of knowledge). But, as a result, he seems to say that you can doubt the existence of the external world without being a sceptic and that you can deny cognitive access to the external world without being an idealist. It seems that Luhmann is pulled into opposite, contradictory directions. He is pulled into a constructivist direction in reaction to metaphysical realist fantasies about a knowledge-independent world that uniquely determines both the meaning of concepts and the truth of statements about the world. He is pulled into a realist direction in reaction to radical constructivist fantasies about the loss of a world to which we refer and that determines the truth of our empirical statements.

In this contribution, I will introduce a new discussion partner, the grammatical realist, and I will compare Luhmann's mix of realism and constructivism with what I refer to as the grammatical realism of among others Wittgenstein, Strawson, Bhaskar, Putnam and Dupré.² Grammatical realists share with Luhmann the criticism of metaphysical realism, a realism that, in the words of Putnam, rests on the assumption that

the world consists of some fixed totality of mind-independent objects. There is exactly one true and complete description of 'the way the world is'. Truth involves some correspondence between words or thought-signs and external things and sets of things (Putnam 1982, 49).

Metaphysical realism is based on a strict coupling of meaning, reference and truth: meaning is determined by reference and so enables us to establish the one and only truth about the world. The critique of both the grammatical realists and of Luhmann is based on a separation of questions of meaning, reference and truth. According to Luhmann, concepts or distinctions are system-internal constructions to which nothing in the world corresponds. And according to Wittgenstein, not the world 'but grammar tells us what kind of object anything is' (Wittgenstein PI, 373). Because there are no ontologically privileged concepts or distinctions and no epistemologically privileged observers, an ontological representation of the world 'as it really is' becomes impossible. However, constructivist conclusions will follow from this critique only when (1) no distinction is made between a language or conceptual scheme and the empirical statements and substantive theories that are made with this language, and when (2) the concept-dependence of knowledge is used to draw conclusions about both the unobservability and the inaccessibility of the world. A critique of these conclusions will result in a position according to which not a language, but only the statements made within this language are accountable to the world:

Wittgenstein does not deny that we, for the most part, talk about language-independent things; he denies only that the latter constitute the meanings of our words, and hence that there are *semantic* connections between language

² Putnam started as a metaphysical realist, became an internal realist in 1976 and recently, after rereading Wittgenstein, turned into what he calls a common sense realist (Putnam, 1999).

and world. Empirical propositions refer to language-independent items and are verified or falsified by the way things are (Glock 1996, 275).

According to this position we do indeed, with Luhmann, construct concepts or distinctions, but, against Luhmann (when in discussion with the metaphysical realist), not the world or reality our knowledge is about. Concepts or distinctions are not barriers between us and the external world, but tools we use to refer to and think and speak about things in the world. These tools do not make our access indirect, but define what the concept of cognitive access means. This cognitive access is neither direct nor indirect.

I will start with what constructivists and grammatical realists have in common: awareness of the necessarily *a priori*, non-empirical, transcendental (Kant), grammatical (Wittgenstein), or self-referential (Luhmann) aspect of empirical knowledge (I). Then I will show how Luhmann has elaborated this non-empirical aspect into a distinction-theoretical variant of constructivism (II). Subsequently, I will elucidate this knowledge-theoretical constructivism with the help of a grammatical analysis of the use of concepts (III). We will see that it makes no sense to draw constructivist conclusions about an inaccessible and unobservable world from the non-empirical aspect of knowledge (IV). To observe the world either is nonsense or elliptical for observing things in the world. In that case the world is neither unobservable, nor inaccessible but inexhaustable. In the concluding section (V) I will show that Luhmann's realism (when discussing with the sceptical idealist) is based on the separation of questions of meaning, reference and truth. His realism rests, like the realism of the grammatical realists, on the distinction between concepts and conceptual schemes that cannot be true or untrue and the empirical statements and substantive theories made with these concepts. In this way both the radical empiricism of Quine (in which conceptual schemes are treated as empirical theories) and radical constructivist positions (in which empirical theories are treated as conceptual schemes) are avoided.

I The Non-Empirical, Conceptual or Intensional Moment of Empirical Knowledge

Both Luhmann and grammatical realists devote attention to the non-empirical, grammatical (Wittgenstein) or self-referential moment (Luhmann) of empirical knowledge. To them, this moment is inherent in the concepts or distinctions used to formulate empirical knowledge. These concepts or distinctions, which together constitute a language, a vocabulary or a conceptual scheme, should thus be distinguished from the empirical statements and substantive theories that we formulate with them. Hence, a language or conceptual scheme is not a theory, although we need a language to be able to formulate a theory. The world does

not dictate the concepts or distinctions with which we observe, indicate or describe things in the world. In that sense, nothing in the world corresponds to our distinctions: “Der Begrifflichkeit konstituiert das, worüber gesprochen wird” (Luhmann 1991, 14) or to the grammatical rules that determine the meaning of words: “grammar tells us what kind of object anything is” (Wittgenstein PI, 373).

Luhmann and the grammatical realists follow Kant in his ‘Copernican revolution,’ that is, in his insight that the way we think and speak about things in the world is not determined by the nature of these things. It makes no difference whether these things are concrete items in the outer world, mental items in the inner world or abstract items in an ideal, Platonic world (see Schwyzer 1973; Gardner 1999). According to Kant, representations do not conform to objects, but objects conform to representations. This should not be conceived as an empirical statement of the ‘mind makes the world’ variety:

There are only two possible ways in which synthetic representations and their objects can establish connection, obtain a necessary relation to and meet one another. Either the object alone must make the representation possible, or the representation alone must make the object possible. In the former case the relation is only empirical ... In the latter case the representation in itself does not produce the object insofar as its existence is concerned, for we are not here speaking of causality by means of the will. None the less the representation is a *a priori* determinant of the object if it is to be the case that only through the representation is it possible to know the object (Kant, Critique of Pure Reason, B 124-5).

That objects conform to representations is a not an empirical, causal or psychological condition of the possibility of empirical knowledge of objects, but a transcendental condition (see Bird 1996, 232). As we know, Kant tried to demonstrate with transcendental arguments, that experience (which he defined as empirical knowledge) is possible, only because we use concepts that have not been derived from experience. However, in Kant’s case this was concerned, first, with a limited number of general concepts (the pure intuitions of sensibility and the pure categories of understanding). Secondly, Kant’s transcendental conclusions focus on the structure of our experience, looked at from a non-psychological, transcendental viewpoint. And thirdly, these conclusions possess absolute and universal validity: they cannot be revised. As Luhmann states, for Kant it is “impossible to envisage a crossing of the borderline between transcendental and empirical” (Luhmann 1997, 361). The transcendental conditions of the possibility of empirical knowledge function as absolute foundations. For example, in Kant’s perspective, our view of objects being located in space and time and as centres of qualitative changes subject to causal laws, is a necessary and general characteristic of the structure of our experience, not a characteris-

tic of the world. This leads to the combination of empirical realism and transcendental idealism that is so thoroughly characteristic of Kant: although we can distinguish within the empirical or phenomenal world between appearance and reality, this empirical world is, from a transcendental viewpoint, the appearance of a noumenal world of which we can have no knowledge whatsoever.

Kant's transcendental/empirical distinction survived in the analytical/empirical distinction of Carnap and the logical empiricists (for whom all synthetic statements are empirical) and the grammatical/empirical distinction of Wittgenstein. What survived was of course not the content of, but the adherence to the non-empirical moment of empirical knowledge. This came under attack from Quine (1951) for whom all knowledge is empirical knowledge. Part of this knowledge seems analytical (or transcendental or grammatical) because, despite recalcitrant experiences, we don't want to give it up for the time being. In spite of his sympathy for such a 'naturalized epistemology', Luhmann does not follow Quine in the latter's radical empiricism. He continues to adhere to the non-empirical or self-referential moment of knowledge:

Die auf systeminterne Operationen bezogene Unterscheidung von Selbstreferenz und Fremddferenz ersetzt nicht nur die Unterscheidung von transzendental und empirisch; sie ersetzt auch die Unterscheidung von analytisch und synthetisch. ... Man kann dann 'analytisch' als selbstreferentiell und 'synthetisch' als fremddreferentiell interpretieren (Luhmann 1990b, 546).

Luhmann and the grammatical realists not only follow, but radicalise and so transform Kant's 'Copernican revolution.' Neither restricts the non-empirical moment of empirical knowledge to a limited number of concepts as Kant did, but instead generalises this moment to all concepts. Neither of them locates the origin of these concepts, as Kant did, in the structure of the experience of a transcendental subject, but replaces the transcendental subject by empirical 'epistemic subjects' (observing systems and language games). And neither of them regards these concepts, as Kant did, as the universal, unrevisable foundations of empirical knowledge. Both say that we 'must' make the distinction between the non-empirical and empirical aspects of knowledge, but the distinction itself is revisable. In other words, what they do is to generalize, naturalize and dynamize the transcendental/empirical distinction.

Apart from these similarities, there are differences as well. I will demonstrate below that for Luhmann, this insight into the self-referential, non-empirical aspect of knowledge seems to be the result of an empirical discovery and the immediate cause of constructivist conclusions (that is to say, in discussions with the metaphysical realist). In contrast, the grammatical realist avoids constructivist conclusions by using a grammatical as against an empirical method.

II The Distinction-Theoretical Constructivism of Luhmann

In Luhmann's view, to answer the Kantian question 'How is knowledge possible?', 'radical constructivism' offers fruitful empirical as opposed to transcendental points of departure:

Ob man nun transzendentaltheoretische oder dialektische Problemlösungen bevorzugte, das Problem lautete: wie ist Erkenntnis möglich, *obwohl* sie keinen von ihr unabhängigen Zugang zur Realität außer ihr hat. Der radikale Konstruktivismus beginnt dagegen mit der empirischen Feststellung: Erkenntnis ist nur möglich, *weil* sie keinen Zugang zur Realität außer ihr hat (Luhmann 1988, 8-9).

The empirical discovery to which Luhmann refers is concerned with Maturana and Varela's brainresearch. Our brain has no contact with the external world in a qualitative sense and only limited contact in quantitative terms, so

Operational closure seems to be the necessary empirical condition of observations. ... What we know of brain research is also true for communication. The lack of an operational access to the environment is a necessary condition for cognition (Luhmann 1993, 774).

According to Luhmann, however, we have to make clear in what way knowledge has no access to reality, in what way there can be no similarity or correspondence between knowledge and the external world.³ To answer this question, Luhmann, following Heinz von Foerster, wants to base his knowledge-theoretical constructivism on the concept of observation (Luhmann 1990b, 10). Like Spencer Brown, von Foerster defines observing as indicating or designating something with the aid of a distinction. Without a distinction (for example between table and chair or risk and danger) we are unable to indicate something, but rather than the distinction, what we indicate is only one side of the distinction, for example a chair. So, on a first level, observers simply observe what they observe (a table). No observer can observe how he observes (the distinction between table and chair) at the same time as he observes what he observes.⁴ Only in a second-order observation can we indicate the distinction used in a first-order observation. This obviously means that the 'how' of a first-order observation becomes the 'what' of a second-order observation (Fuchs 1996, 323). Thus, we may find out in a second-order observation

³ "Es müßte vielmehr genau herausgearbeitet werden, in welchen Hinsichten es ... keine Übereinstimmung, nämlich keine Entsprechung in der Außenwelt geben kann. Und dies müßte in einer genaueren Analyse des Erkenntnisvorgangs selbst gezeigt werden" (Luhmann 1990b, 521-522).

⁴ See also Polanyi (1966) on the difference between focal (what) and subsidiary (how) awareness: one can observe things in the world with a theory or one can observe the theory itself as a thing in the world, but not both at the same time.

that it makes a difference whether in first-order observations we use the distinction risk/danger or the distinction risk/certainty. A shift from risk/certainty to risk/danger amounts to a shift in the meaning of the concept of risk, to a shift in the way the word risk is used. In this sense a second-order observation looks like a grammatical investigation of the concepts that are used in first-order observations. Yet also a second-order observation uses a distinction that cannot simultaneously be indicated by that same observation. No observation can observe *how* it observes at the same time as it observes *what* it observes. In that sense, distinctions are the blind spots of observations. In a number of steps, Luhmann employs this concept of observation to reach constructivist conclusions (here I follow Luhmann 1990a, 67–70). First the concept of observation is coupled with the distinction between system and environment. Next both are combined with the distinction between observation and operation, which then enables Luhmann to draw constructivist conclusions.

In a first step, Luhmann proposes to start from the distinction between system and environment, a distinction that replaces both the ontological one between being and non-being and the epistemological one between subject and object. The epistemic subject or knowing person is now replaced by the observing biological, psychic or social system. To avoid misunderstandings: Luhmann does not deny the existence of persons. But first, persons are not systems, and second, if we want to know what the concept of person means, we have to look at the social system in which this concept is used (see also Rorty 1988). And in order to know what cognitive processes are involved we have to choose a systems-referent. Because we are embodied, personal and social beings (Harré 1993) that systems referent can either be the brain, the mind or a social system.

Now, 'If one accepts this suggestion [to start with the system/environment distinction] the answer to the question, how is knowledge possible?, is to begin with as the operation of a system separated from its environment' (67–68). Such a system is operationally closed and cannot perform operations outside its own boundaries. However, this raises the question as to how an operation that is incapable of access to the external world and, in this sense, acts blindly, can be called cognition. In a second step then, in order to 'answer this question it is advisable to introduce a second distinction between *operation* and *observation*' (68). An observation is an operation that indicates using a distinction. But as an operation it belongs to the blind autopoiesis of a system. Hence, as an internal operation, 'an observation leads to knowledge only insofar as it leads to reusable results in the system' (69). In a third step, constructivist conclusions can now be drawn:

The passage to 'constructivism' follows from the insight that it is not only for negations that there are no correlates in the environment of the system but even for distinctions and designations (therefore for observations) ... Expressed in other words, the unity of a distinction employed for observation is

constituted within the system. It is only in the observing system that things distinguished are brought to the unity of being distinct. Cognition is neither the copying nor the mapping nor the representation of an external world in a system (69).

According to Luhmann, there are no correlates in the environment for distinctions, designations, observations and cognitions. This seems to violate his distinction between the self- and external referential moments of cognition. At other times, however, and more in agreement with the distinction between concepts on the one hand and empirical statements and substantive theories at the other hand, there are no correlates only for distinctions:

Die Wahl dieser oder jener Unterscheidung, die das Beobachtete markiert, ist nie durch die Umwelt diktiert, sondern immer eigene Konstruktion des Systems. Die Umwelt enthält keine Unterscheidungen (1990c, 10).

In this more restricted sense, the key to Luhmann's distinction-theoretical constructivism lies in the insight that distinctions or concepts are system-internal constructions to which nothing in the world corresponds. It is not the nature of risk that dictates or corresponds to the use of the distinction between risk and certainty, but it is the use of the distinction between risk and certainty that determines the nature of risk. The nature of risk is determined by and changes with the nature of the distinction (risk/certainty or risk/danger) that is used to indicate the risk-side of the distinction.

Several things should be noted. In the first place, there seems to be a shift from an empirical argumentation, based on the results of brain research, to a conceptual argumentation, based on the distinctions between system and environment, distinction and indication and operation and observation. In the second place, as such, no constructivist conclusions need to follow from this. Non-metaphysical realists as diverse as Wittgenstein, Strawson, Bhaskar, Ellis (1993), Dupré (1993), Putnam (1995) and Hacker (1987) agree (1) that the world does not dictate the concepts we use to refer to and describe things in the world, (2) that concepts (or the conceptual moment of cognition!) are not descriptions, representations or copy's of things in the world, but, in the words of Wittgenstein, norms of representation that we use in empirical statements about things in the world, and (3) that different concepts make visible different things in or aspects of the world. Taken together, this means that the world does not contain self-identifying things, but can be categorized into several alternative, overlapping ways relative to conceptual schemes. We can map the world in different ways, just as we can make different maps (a road map, a vegetation map, a population map and so on) of the same area. That area does not tell us what kind of map to make and what mode of representation to use. However, this does not threaten the reality of the area or the truth of our maps. Points and lines on the map do not resemble cities and roads. But because we know what

they mean we can use them to refer to cities and roads, which enables us to establish the truth and falsities of our maps. So, relativity to conceptual schemes does not threaten the reality of what we refer to:

Provided realism is separated from certain essentialist theses, I see little more reason why the possibility of distinct and perhaps overlapping kinds should threaten the reality of those kinds. Just as a particular tree might be an instance of a certain genus (say Thuja) and also a kind of timber (cedar) despite the fact that these kinds are only partially overlapping, so an organism might belong to one kind defined by a genealogical taxonomy and another defined by an ecologically driven taxonomy (Dupré 1993, 57-58).

This combination of epistemological relativism and ontological pluralism is contested by the metaphysical realist for whom only 'one true map' exists, and by the constructivist, for whom neither a road map, nor a vegetation map nor a population map are maps of the area 'as it really is':

Wenn einmal die Beziehung auf die letzte Realität als Garant der Stabilität der Erkenntnis verworfen worden ist, kann man keinen neuen Fixpunkt mehr gewinnen, der endgültige Behauptungen ermöglicht. Es gibt keinen letzten Beobachter, der die Wahrheit kennt (Baraldi/Corsi/Esposito 1997, 103).

In the next two paragraphs I will, with Luhmann and against the metaphysical realist, show why nothing in the world can determine our concepts and why, against Luhmann, no constructivist conclusions about an unobservable and inaccessible world follow.

III A Grammatical Analysis of the Use of Concepts⁵

Discussions between realists and constructivists tend to be 'desk-thumping, foot-stamping' in nature (Fine 1986, 129). Although they agree about the existence or reality of such things as tables, electrons or organizations, they both feel the need to add some 'really's' to their propositions while stamping their feet. Thus, the realist wants to emphasise that these things 'really' exist, that we know what they 'really' or 'in themselves' are, while the constructivist will say that we do not 'really' know what these things 'really' or 'in themselves' are. Wittgenstein's realism is the realism of the realist and the constructivist before they start stamping their feet. He will tell the desk-thumping partners that knowing that something exists is the same as 'really' knowing that something 'really' exists. In other words, the various 'really's' of both parties don't add anything. Wittgenstein's realism is a realism that is presupposed by and implicit-

⁵ In my Wittgenstein interpretation, I am heavily indebted to the work of Baker, Hacker and Glock.

ly inherent in what we say, think and do. Making this explicit may sound awkward and trivial, and hence, is necessary only to point out to others the absurdities that result from denying these implicit presuppositions. Making explicit what is implicit in what we do, say and think is referred to as a transcendental analysis by Strawson and Bhaskar. Wittgenstein speaks of a grammatical analysis, of explicitly mapping the implicit rules for the correct use of words in order to be able to separate sense from nonsense. Therefore we might call this realism transcendental or grammatical realism.

In both a transcendental and a grammatical analysis, we make explicit what is implicit in what we do, say and think:

Still, if it is the case that philosophy is, as I have claimed it can be, a conceptual science, then, like any science, it ought to be able to tell us something we did not already know: it ought to be able to surprise us. Philosophy does so when it (for the first time) makes explicit what is already presupposed by the activities in which we engage; or when, to put it in another way, it shows the conditions of their possibility (Bhaskar 1978, 257).

If we follow Hacker (1996, 178–179) and treat the conclusions of transcendental arguments neither as *a priori* synthetic statements about the structure of our experience (Kant), nor as *a priori* synthetic statements about the world (Bhaskar), but as grammatical statements about the rules that determine the meaning of the words we use in empirical statements about things in the world, then a transcendental analysis (as used by Strawson and Bhaskar) and a grammatical analysis can be treated as similar. Applied to the use of concepts, such an analysis could take the following form.

We communicate with one another in our descriptive language-games about things in the world with the help of concepts or distinctions (just as the realist and constructivist do, before they start stamping their feet). What we implicitly do when we use concepts can be made explicit in the following way. The use of concepts always has the logical structure of a judgement. To say about *x* that it is *y* (for example *x* is a table or *x* is red), means first that we place *x* under a general denominator: there are more things that are a table or that are red. Second, it means that we say that *x* is not *z* (for example, it's not a chair or it's not blue). The judgement thus has a subject-predicate structure, where the predicate is something that either sorts or characterises the subject. A sorting predicate tells us what kind of thing the subject is, what kind of thing it is an instance of and a characterising predicate tells us what properties it has: "The primary sense of 'y is predicated of x' is 'x is asserted to be non-relationally tied to y either as an instance of y or as characterized by y'" (Strawson 1959, 171).

Now, the metaphysical realist tells us that the use of concepts as categories is possible only if there are things in the world that are similar to each other and different from other things: we distinguish between tables and chairs because

there are table and chairs. These similarities of things in the world determine or dictate the categories of our language:

The [metaphysical] realist maintains that the world (the content of our system) comes neatly divided at the joints. A scheme provides only a vocabulary for representing what is already the case. A naturalistic relation – resemblance, causality, or whatever – links scheme and content (Elgin 1997, 156).

The standard counter argument is old: “The problem is that any two things are alike in some respects and different in others. So likeness alone is powerless to settle matters of categorization” (Elgin 1997, 177; see also Goodman 1972 and Ellis 1993). Two similar things are never the same in every respect and two different things have always something in common. Therefore, the use of categories means that we treat two things as the same, in spite of their differences and as different from other things, in spite of their similarities.⁶ If we didn't, our language would consist of an indefinite number of uniquely referring expressions instead of a limited number of categories. In that sense, the use of concepts is a way of reducing complexity: from all the possible similarities and differences in the world, one is selected.⁷

Hence, to categorize, that is, to treat two things as the same, we don't need similarities but relevant similarities. But relevance is a highly pragmatic, context- and purpose-dependent matter. To define a concept or to draw a distinction we need a motive, as Spencer Brown says. The things in the world do not provide us with the pragmatic context that we need for the selection of relevant similarities from all possible similarities. The problem is not that there are no similarities and differences: there are too many of them and it is up to us to decide which of them we consider relevant for what reason. We don't need to distinguish between cows and bulls or between small and large expenditures, but if we do, we refer to real similarities and differences and we can do so both retro- and prospectively. The problem is not that the world is undifferentiated. It is not, but it can be differentiated in different ways while the world does not tell us what way to choose.⁸

Let us look at, as a much discussed example, the definition of water as a liquid with the chemical structure H₂O. According to the metaphysical realist, science

⁶ See also, according to Kibed/Matzka (1993, 64), Spencer Brown: “Identifikation ist bei Spencer Brown also der Verzicht, in einer Verschiedenheit ein Unterscheidungsmotiv zu sehen, und Gleichungen sind später, in formaler Analogie dazu, die Aufhebung einer Unterscheidung.”

⁷ See also Luhmann: “Seit Kant ist eine funktionale Definition des Begriffs geläufig. Begriffe bilden danach eine Regel für die Herstellung von Einheit angesichts einer Mannigfaltigkeit. Begriffe leisten Reduktion von Komplexität. Sie formieren eine Selektionsleistung – sei es durch Hervorheben, sei es durch Weglassen” (Luhmann 1990b, 386).

⁸ See also, according to Kibed/Matzka (1993, 63), Spencer Brown: “Wäre vor der Bildung eines Begriffs der durch ihn zu charakterisierende Unterschied schon vollständig gegeben, wäre seine Einführung überflüssig. Wäre allerdings kein Unterschied gegeben, wäre seine Einführung unmöglich.”

has discovered this true meaning of the word water. The kernel of truth of this view lies in the fact that scientific discoveries can indeed be a motive to change the meaning of words. However, in that case we haven't discovered the 'true' meaning of the word water (we had to know what water was to be able to discover that it has the microstructure of H_2O), but we raise this empirical discovery to a norm (referred to by Wittgenstein as a grammatical rule about the use of words or as a norm of representation): in special, scientific contexts we use this microstructure as a criterion of the term 'water'. This is true only in specific contexts: somebody asking for a glass of water, does not ask for a glass of H_2O : when he drinks a certain amount of pure H_2O , he'll die. Now, to continue Putnam's twin earth example, if we came across a liquid on another planet which is in every respect like our water, with the exception of its microstructure (it is XYZ), we would have to decide: either we stick to our definition (treat it as analytic) in which case the liquid is not water, or we change our definition, in which case we get two kinds of water with different chemical structures. The similarities and differences between both liquids do not tell us what choice we have to make. The choice is up to us, just as scientists have chosen to call the liquid with the chemical structure D_2O heavy water:

Insofar as water is necessarily H_2O or gold necessarily has atomic number 79, this is not because of *de re* metaphysical necessities in nature, but because we have incorporated these empirical discoveries into our definitions of these terms (at least within scientific discourse) (Hacker 1996, 253).

This transcendental refutation of the metaphysical realist can be given a positive formulation. We then say that empirical knowledge or descriptive language-games presuppose the use of concepts and conceptual schemes that are not dictated to us by the world. We use these concepts in empirical statements and substantive theories about things in the world and it is the world that determines the truth of these statements and theories. To use a concept is to reduce complexity and we can reduce complexity in different ways. In doing so, we construct concepts, but not the things we observe, indicate or describe with these concepts.

The distinction between grammatical and empirical propositions is the cornerstone of Wittgenstein's philosophical method. Grammatical propositions are concerned with the meaning of words that we use in empirical propositions about things in the world. Questions of meaning thus precede, are a condition of and should not be confused with questions of reference and truth:

Wittgenstein does not deny that we, for the most part, talk about language-independent things; he denies only that the latter constitute the meanings of our words, and hence that there are *semantic* connections between language and world. Empirical propositions refer to language-independent items and are verified or falsified by the way things are (Glock 1996, 275).

In Wittgenstein's view, the meaning of a word is not determined by the object it stands for as in internalist, externalist or Platonist theories of meaning. Signs such as words acquire life or meaning, neither by things inside our mind (inner, mental objects), nor by things in the external world (outer objects), nor by things in the ideal world (abstract objects), but by the way in which they are used. This use is a normative practice led by rules that can be explicit or implicit. A grammatical analysis is aimed at a perspicuous explicit overview of these, often implicit rules. Such a method is descriptive, but the rules described don't describe anything: similar to the rules of a chess game, rather than telling us what is the case, they tell us what moves are allowed in the language game we are playing.

Grammatical rules constitute the normative part of language. Without such a normative part, language would be impossible. These rules constitute not the absolute foundations, but as we will see the autonomous, dynamic and functional scaffolding of our language. First, this scaffolding is *autonomous*: grammatical rules are not accountable to the world, as we just have seen. Just like the rules of chess, we have not discovered but created them. They are human constructions. This does not mean that we can select these rules as we please or that we cannot search for reasons why these rules exist. It only means that questions of meaning ('how long is a metre?') and questions of truth ('how long is this table?') are answered in a different way. The definition of a metre is not a description, but norm of representation that we use to describe the length of tables. That is why we cannot deny that a meter has a certain length without uttering nonsense (although we can adopt a different system of measurement), while we can meaningfully deny that a table has a certain length. The choice of a system of measurement is 'up to us', but not the the length of a table.

Second, the distinction between grammatical and empirical statements is *dynamic*: the scaffolding is not unrevisable. What used to be empirical propositions can become grammatical propositions (we then raise an empirical discovery to a norm), and what used to be grammatical propositions can become empirical propositions:

Empirical propositions are 'hardened' into rules ..., while rules lose their privileged status and are abandoned. For example, the sentence 'An acid is a substance which, in solution, turns litmus-paper red' lost its normative status (acids now being defined as proto-donors) and turned into an empirical proposition which holds true of most, but not all, acids. Conversely, the proposition 'Gold has 79 protons' was originally an empirical discovery but is now partly constitutive of what we mean by 'gold' (Glock 1996, 133).

Sometimes these changes in grammatical rules are subject of debate ('when is a foetus a human being?'). In other cases, changes are needed due to new situations (what does 'mother of' mean, now the person who carries the child is not necessarily the one who produces the fertilised egg?). And sometimes, these

changes are a reaction to scientific discoveries. By using a statement normatively as a rule, we do not create a truth, but adopt a (new) norm of representation. Third, although the status of a statement can change, it cannot have both an empirical and a grammatical status at the same time. Its status depends on the *function* or role it performs, on the way it is used. We don't confuse the role of a ruler and the role of the object measured: we don't use a ruler to measure itself. A statement like 'white is lighter than black' (or 'observing is indicating with a distinction') looks like a statement of fact, but actually functions as a grammatical rule. That white is lighter than black is neither a (falsifiable) empirical generalization, nor a well-entrenched belief (Quine and Goodman), nor a Carnapian analytic truth that follows from the meanings of its constituent words. If it were an empirical generalization or well-entrenched belief, light could be darker than black, which of course is nonsense. And the statement doesn't follow from, but rather determines the meaning of the constituent words. It is one way to explain the meaning of the words white and black.

IV Luhmann's Constructivist Excesses

On the one hand, Luhmann seems to agree: although nothing in the world dictates our distinctions, although there are no ontologically privileged distinctions and no epistemologically privileged observers, this does not mean that there are unknowable things in the world, and of course systems theory is about real operating systems. On the other hand, his concept of observation leads him to constructivist conclusions: if to observe means to indicate x with a distinction between x and y , then, first, we cannot observe the world ('Cognition deals with an external world that remains unknown') and, second, we cannot have direct access to things in the world ('There is an external world ... but we have no direct contact with it').

That we cannot observe and arrive at knowledge of the world is a misleading formulation of a harmless conceptual truth. To observe the world either is elliptical for observing things in the world or nonsense: there is no such thing as observing the world. The world is, in Husserlian terms, the ever yielding, never reachable horizon within which observations take place. In system theoretical terms, the world is the (presupposed but) unobservable unity of the difference between system and environment. And defined as everything there is, 'The world can only be identified ... as a logically infinite information load' (Luhmann 1998, 11). We 'cannot' observe infinity, just like we 'cannot' enumerate all cardinal numbers. This 'cannot' is not an empirical cannot, due to a defect of our cognitive capacities, but a conceptual 'cannot'. This 'unobservable world' has nothing to do with Kant's noumenal world. It is a world that can only be observed by the things in or aspects of it. As such is not an inaccessible,

unobservable or unknowable world, but an inexhaustable world: things in the world can be described and identified in an unlimited number of ways. The world is not the object of knowledge and of science. Different sciences like physics, biology, psychology and sociology observe different things in or aspects of the world just as different societal subsystems can treat the same event differently: as a legal, or an economic or a scientific event. To identify a thing in or an aspect of the world, we need a language or conceptual scheme, but there is no all encompassing scheme, just as there is no all encompassing description of the world.

Is then our cognitive access to things in the world indirect, because mediated by our conceptual schemes? Constructivists

believe that all cognitive activity – even the most mundane, like describing states of affairs – occurs within and through a conceptual framework. Reality is never directly available to cognizers in some unmediated way; rather, reality is perceived only through cognitive lenses in virtue of which epistemic perception is possible (Fay 1996, 88).

The trick is made by defining cognitive access as indirect. For this to make sense, we have to give a meaning to the concept of direct access. If indirect means 'concept- or distinction-dependent', then direct means 'concept- or distinction-independent'. This, of course, can only be a conceptual confusion: observing is (defined as) using a distinction, describing is (defined as) using concepts, and knowledge is (defined as) the result of observations based on distinctions! These are not empirical discoveries that can be falsified, for their alternatives are excluded by definition! To say that observations are indirect is like saying that direct observations are theoretical possibilities that are empirically impossible. But given this definition, to say that direct observations are 'impossible possibilities' is nonsense and so is to say that observations are indirect. Someone who asks for a distinctionless observation ('what does the world look like independent of our distinctions?') or a conceptless description, does not ask for something that we, unfortunately, are unable to do, but does not understand the meaning of observing or describing. Someone who says that direct access to the world is not possible shows that he does not understand the meaning of the term observation and hence is talking nonsense.⁹ He makes a metaphysical (!) use of what in normal circumstances is a meaningful distinction. I can see someone in pain (he is crying with pain) and I can see someone take painkillers and infer he is in pain. We can call the former direct and the latter indirect knowledge (although the seeing in both cases is neither direct nor indirect). Applied to the accessibility of the world, this normal use of the

⁹ "In fact, one might say that it is characteristic of Wittgenstein to try to show us that when philosophers say that we can't do something, say that something is impossible, typically the thing they tell us it is impossible to do is a nonsense thing, an unintelligible thing" (Putnam 1995, 40).

distinction between direct and indirect is transformed in what Wittgenstein would call grammatical nonsense, disguised in the form of an empirical statement. Concepts should not be regarded as barriers between us (or systems) and the external world, as constructivists do, but as tools we use to indicate and describe things in the world.

If the distinction between direct and indirect access makes no sense, then the same applies to the distinction between the world 'as it really is' and the world 'as it appears in our conceptual scheme', between unknowable things in themselves and knowable things for us (see Strawson 1997). When we mean by things in themselves 'the same things as the things for us, but abstracted from the concepts we use to describe them', then the unknowability of things 'in themselves' is an innocent tautology that results from the fact that we can know only what we can know. Yet, when things 'in themselves' are supposed to be different but unknowable things, the proposition of its unknowability is transformed into nonsense:

But this 'in themselves' is quite empty – to ask how things are 'in themselves' is, in effect to ask how the world is to be described in the world's own language, and there is no such thing as the world's own language, there are only languages that we language users invent for our various purposes (Putnam 1995, 29).

V Luhmann's Non-Metaphysical Realism

As we have seen, both Luhmann and the grammatical realists radicalize (generalize, naturalize and dynamize) Kant's Copernican revolution, his insight that the way we think and speak about things in the world is not determined by the nature of these things. They all uncouple the metaphysical or ontological tight coupling of meaning, reference and truth. Meaning is not determined by reference, but meaning precedes, as the condition of their possibility, both the reference to things in the world and the truth of empirical statements about these things. We have also seen that constructivist conclusions only follow if, first, the concept- or distinction-dependence of observation is used to draw conclusions about the unobservability and inaccessibility of the world and if, second, no distinction is made between the self- and external referential moments of empirical knowledge, between the self-referentiality of a language or conceptual scheme and the external referentiality of the empirical statements and substantive theories that we formulate in such a language. With regard to the first, we have seen that it rests on a conceptual confusion. With regard to the second, we will now see that such a distinction is absolutely fundamental to Luhmann's epistemology. It constitutes its anti-constructivist core that it shares with the grammatical realists.

Hence, if we strip Luhmann's epistemology of its constructivist excesses about an unobservable and inaccessible world, what remains is a form of realism that is presupposed in the concept of observation. What is fundamental to this form of realism and what makes it different from forms of metaphysical realism and sceptical idealism or constructivism are the distinctions between (1) concepts and theories, between (2) non-scientific and scientific concepts and theories and in both cases between (3) questions of meaning, reference and truth.

(1) To begin with, the working method of Luhmann and the grammatical realists is based on a distinction between language and theory, between concepts and conceptual frameworks on the one hand, and their use in empirical propositions and substantive theories on the other. Concepts are not empirical theories and, hence, cannot be true or false.¹⁰ They constitute the language in which we formulate empirical statements (about the degree of inflation) and substantive theories that are either causal (about the causes and effects of inflation), or functional in nature (about the functions of inflation, i. e., about the problems solved by inflation).¹¹ Conceptual frameworks constitute, as we have seen, the non-empirical (intensional, grammatical or self-referential) aspect of empirical theories.

Using these, we can, on the other hand, refer to things in the world (external reference). Because there is a difference between concepts and the things they refer to, we can refer to the same thing using different conceptual frameworks (referential detachment and overlap). According to Luhmann, *that* we refer to things in the world is not in debate, but a determining factor is *how* we do so, in other words, what concepts or distinctions we use to do so:

Das ändert nichts daran, *daß* die Theorie auf die Außenwelt referiert; nur bleibt die Referenz dadurch bestimmt und dadurch an die systemeigene Autopoiesis angeschlossen, *wie* sie (systemintern) auf die Außenwelt referiert. Dieses 'wie' kann sich im 'structural drift' des Systems ändern, ohne daß deswegen die Außenwelt sich ändern müßte (Luhmann 1990b, 408).

Without this distinction between self- and external reference we could not distinguish between (internal) changes in our theories and (external) changes in their objects or the emergence of new objects, between better descriptions of the same kind of organizations, the description of a changed organization and the description of the emergence of a new kind of organization, like network organizations. In the words of Luhmann:

¹⁰ "Unbestritten ist heute, daß Begriffe weder wahr noch richtig sein können, sondern daß sie nur Instrumente sind, die sich als mehr oder weniger geeignet erweisen, wenn es um die richtige Feststellung von Wahrheiten bzw. Unwahrheiten geht" (Luhmann 1990b, 390).

¹¹ Functional analyses are based on causal explanations (functions are effects) and raise new causal questions (about side-effects). Clarification of this connection, however, presupposes that we substitute an empiricist by a realist concept of causality and explanation (see Christis 1998).

Without closure, the system would continually mix up its own operations with those of the environment, conscious states with external states or words with things. It could not make the (re-entering) distinction of self-reference and external reference. It could not even match external and internal states. It could not separate the observer from the observed. It could not produce cognition. What we know from brain research is also true for communication. The lack of an operational access to the environment is a necessary condition for cognition (Luhmann 1993, 774).

These are of course not empirical discoveries but conceptual 'truths': that we distinguish between words and things is presupposed in what we do, say and think. If we didn't make that distinction, language would be impossible.

When we, as in Quine's radical empiricism, treat conceptual frameworks as empirical theories that are accountable to the world, we will end up in an empiricist misunderstanding in which all knowledge is empirical, and deny the non-empirical, self-referential aspect of empirical knowledge. Conversely, when we treat empirical theories as conceptual frameworks that are not accountable to the world, we lapse into a constructivist misunderstanding in which theories lose their external referents. The distinction between self-reference and external reference sets Luhmann apart from these forms of empiricism and constructivism! This distinction fulfils the same role as that between grammatical statements about the concepts we use and empirical statements about things in the world. What we have lost is the world that dictates the meaning of our concepts. But we have not lost the world that determines the truth of our empirical statements. The world does not dictate the meaning of concepts like recursive structures (Luhmann) or child abuse and satanic rituals (Hacking). But the world determines whether structures are recursive and whether satanic rituals are as common as child abuse.¹²

(2) Second, the working method of Luhmann and the grammatical realists is based on the distinction between non-scientific and scientific languages and theories. According to Luhmann, scientific knowledge differs from everyday knowledge first by the nature of the concepts used and second by the way in which the empirical statements and substantive theories formulated with these concepts are tested for truth:

Um Wissenschaft handelt es sich erst, wenn Begriffsbildung eingesetzt wird, um feststellen zu können, ob bestimmte Aussagen wahr (und nicht unwahr) sind, wenn also der Code des Wissenschaftssystems die Wahl der Unterscheidungen dirigiert, mit denen die Welt beobachtet wird (Luhmann 1990b, 124-125).¹³

¹² See Hacking for a self-correction: "My switch from object (child abuse) to idea (the concept of child abuse) is worse than careless" (Hacking 1999, 29).

¹³ For a similar, non-conventional definition of science, see Bhaskar 1975.

According to Luhmann, (scientific) concepts differ from (everyday) words in that they use specified and interdependent distinctions and can thus be applied relatively free from context.¹⁴ Hence, the out-differentiation of science as a societal subsystem is based in part on the 'conceptualization of words'. This is the preparatory 'theory-technical' (better still: conceptual) work for the formulation of empirical propositions that can be tested for truth (Luhmann 1990b, 389). Systems theory uses the distinction between system and environment to observe the world. Without this distinction it could not observe systems and in that sense systems are observer-dependent. But in no way does this mean that systems are constructions of systems theory and that the concept of a system is only an analytical construct. Luhmann has always opposed such an analytical understanding of the concepts of systems theory: systems theory investigates 'real operating systems'. What this means is that we construct the distinctions that we use to observe things in the world, but not the things we observe. The concept of autopoiesis is defined by a scientific observer, but the autopoiesis of a system is not produced by an observer. It is produced by the system itself, although only an observer with this concept can observe an autopoietic system or the autopoiesis of a system.¹⁵

(3) The differentiation of science as a societal subsystem is based not only on the 'conceptualization of words', but also on its specialization in questions of truth. Science is an essentially sceptical enterprise (Merton's organized scepticism) that, for each empirical proposition, asks itself whether it is true or false, in the awareness that the truths of today will be the falsities of tomorrow. Other sub-systems cannot afford a similar sceptical attitude (for one thing, because they are under pressure to act), and neither do we assume such a sceptical attitude in everyday life. In Luhmann's view, we implicitly use something like a redundancy theory of truth in everyday life and don't distinguish between knowledge and true knowledge. Because knowing that p means the same as knowing that it is true that p or knowing that it is a fact that p , the concept of 'true' seems to be redundant: to know that it is raining is the same as to know that it is true that it is raining or that it is a fact that it is raining. Nevertheless, we cannot deny that the word true is often used and, hence, that it must have a meaning or function (see also Rundle 1979, 358 et seq.). Therefore, to Luhmann, this redundancy is valid only for the first-order observer: for him, knowledge is true knowledge, to know that it rains is the same as to know that

¹⁴ "Begriffe sollten also durch den Kontext begrenzenden Unterscheidungen und durch fixierten Bezug auf andere Begriffe so weit geklärt sein, daß ihre Bedeutung auch relativ kontextfrei (das heißt: nur im Eigenkontext der Begriffe) verstanden und als Problem für sich erörtert werden kann" (Luhmann 1990b, 387).

¹⁵ See also Teubner: "Autopoietische [soziale] Systeme werden somit durch realablaufende, selbstorganisierende soziale Prozesse definiert und nicht durch wissenschaftliche Beobachter. Deshalb ist aufmerksame empirische Beobachtung vonnöten, um herauszufinden, welche Operationen in unserem Feld gekoppelt sind, so daß sie die Autonomie eines autopoietischen Systems erlangen" (Teubner 1995, 146).

it is true that it rains. When one wants to know whether this knowledge is true knowledge, one must observe this knowledge in a second-order observation using the distinction between true and false:

Erst auf der Ebene der Beobachtung zweiter Ordnung kann, mit anderen Worten, der Differenzcode wahr/unwahr voll zum Zuge kommen; erst auf dieser Ebene kann ...Wissenschaft als System ausdifferenziert werden. Dieses System führt dann all seine Operationen auf die Unterscheidung wahr/unwahr zurück, also auf ein Schema der Beobachtung zweiter Ordnung (Luhmann 1990b, 170).

Now how does science determine the truth of empirical propositions and substantive theories? To answer this question, we do not need a theory of truth, but an elucidation of the meaning of the concept 'true', of the way the concept is used. Science does determine truth in various and combined ways, for example by looking at the world (whether elements of a system are actually recursively coupled), by looking at each other to find out if we can agree about what is the case, and by looking at our theories and their internal consistency. This constitutes the rational kernel or grammatical truth of correspondence, consensus and coherence theories of truth, respectively. Theories of truth for the most part just single out one of the many aspects of the use of the word true and try to convert this aspect into a theory that alone determines the correct application of the term true. What we need is not a theory, but a perspicuous overview of the different ways the word true is used. With Luhmann, we can also look at the different functions of the way the concept is used in the evolution of science. According to Luhmann, they serve as mechanisms of variety (correspondence), selection (consensus) and stabilisation (coherence), respectively. In this way, Luhmann, too, puts the 'truth' of theories of truth into perspective:

Alle diese Theorien haben eine bestimmte polemische Aufgabe gesehen und wahrgenommen. Sie behalten darin ihr Recht, sie müssen nur ihre Ambition aufgeben, allein zu bestimmen, was Wahrheit ist (Luhmann 1990b, 610).

So, like the grammatical realists and unlike many constructivists, Luhmann does not deny the sense of applying truth-predicates, but does not base it on a theory of truth.

References

- Baraldi, Claudio/Corsi, Giancarlo/Esposito, Elena (1997): Glossar zu Niklas Luhmanns Theorie sozialer Systeme. Frankfurt a.M.: Suhrkamp.
 Bhaskar, Roy (1975): A realist theory of science. Leeds: Leeds Books.
 Bhaskar, Roy (1978): The possibility of naturalism. Brighton: Harvester Press.

- Bird, Graham (1996): McDowell's Kant: mind and world. *Philosophy* 71, 151-243.
- Christis, Jac (1998): *Arbeid, organisatie en stress*. Amsterdam: Spinhuis.
- Dupré, John (1993): *The disorder of things. Metaphysical foundations of the disunity of science*. Cambridge: Harvard University Press.
- Elgin, Catherine (1997): *Between the absolute and the arbitrary*. Ithaca and London: Cornell University Press.
- Ellis, John (1993): *Language, thought and logic*. Evanstone: Northwestern University Press.
- Fay, Brian (1996): *Contemporary philosophy of social science*. Oxford: Blackwell.
- Fuchs, Stephan (1996): The new wars of truth: conflicts over science studies as differentiated modes of observation. *Social Science Information* 35, 2, 307-326.
- Gardner, Sebastian (1999): *Kant and the critique of pure reason*. London: Routledge.
- Glock, Hans-Joachim (1996): *A Wittgenstein dictionary*. Oxford: Blackwell
- Goodman, Nelson (1972): *Problems and projects*. Indianapolis: Hackett Publishing Company.
- Hacker, Peter (1987): *Appearance and reality*. Oxford: Blackwell.
- Hacker, Peter (1996): *Wittgenstein's place in twentieth-century analytic philosophy*. Oxford: Blackwell.
- Hacking, Ian (1999): *The social construction of what?* Cambridge: Harvard University Press.
- Harré, Rom (1993): *Social being*. Oxford: Blackwell.
- Kant, Immanuel (1965): *Critique of pure reason*. New York: St Martin's Press.
- Kibed, Matthias Varga von/Matzka, Rudolf (1993): Motiven und Grundgedanken der 'Gesetze der Form'. S 58-86 in: Dirk Baecker (Hg.), *Kalkül der Form*. Frankfurt: a.M. Suhrkamp.
- Luhmann, Niklas (1988): *Erkenntnis als Konstruktion*. Bern: Benteli.
- Luhmann, Niklas (1990a): The cognitive program of constructivism and a reality that remains unknown. P. 64-85 in: W. Krohn (Ed.), *Selforganization. Portrait of a scientific revolution*. Dordrecht: Kluwer.
- Luhmann, Niklas (1990b): *Die Wissenschaft der Gesellschaft*. Frankfurt a.M.: Suhrkamp.
- Luhmann, Niklas (1990c): *Soziologische Aufklärung 5*. Opladen: Westdeutscher Verlag.
- Luhmann, Niklas (1991): *Soziologie des Risikos*. Berlin: de Gruyter.
- Luhmann, Niklas (1993): Deconstruction as second-order observing. *New Literary History* 24, 763-783.
- Luhmann, Niklas (1995): *Social Systems*. California: Stanford University Press.
- Luhmann, Niklas (1997): The control of intransparency. *Systems Research*, 14, 359-371.
- Polanyi, Michael (1966): *The tacit dimension*. New York: Doubleday.
- Putnam, Hilary (1982): *Reason, truth and history*. Cambridge: Cambridge University Press.
- Putnam, Hilary (1995): *Pragmatism*. Oxford: Blackwell.
- Putnam, Hilary (1999): *The threefold cord*. New York: Columbia University Press.
- Quine, Willard Van Orman (1980 [1951]): Two dogma's of empiricism. P. 20-47 in: Willard Quine, *From a logical point of view*. Cambridge: Harvard University Press.
- Rasch, William (1998): Luhmann's Widerlegung des Idealismus. *Constructivism as a two-front war. Soziale Systeme* 4, 1, 151-161.
- Schwyzler, Hubert (1973): *Thought and reality: the metaphysics of Kant and Wittgenstein*. *Philosophical Quarterly* 21, 1, 3-15.
- Rundle, Bede (1979): *Grammar in philosophy*. Oxford: Clarendon Press.
- Strawson, Peter (1959): *Subject and predicate in logic and grammar*.
- Strawson, Peter (1997): *Entity and identity*. Oxford: Oxford University Press.
- Teubner, Gunther (1995): *Wie empirisch ist die Autopoiesis des Rechts?* P. 137-157 in: R. Martensen (Hg.), *Das Auge der Wissenschaft*. Baden-Baden: Nomos.
- Wittgenstein, Ludwig (1953/1958): *Philosophical investigations*. Oxford: Blackwell.