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## How to learn more

### An apology for a strong concept of iconicity

Iconicity is generally conceived of as the sign-relation making one phenomenon signify another by similarity in some respects. Iconicity is hence based on similarity, but it is not simply defined by it, for a very simple reason. Similarity is generally symmetrical<sup>i</sup>: if *a* is similar to *b*, then *b* is also similar to *a*; while sign-relations are generally asymmetrical: if *a* signifies *b*, it does not follow that *b* signifies *a*. Iconicity adds to similarity an intention aimed at *b*, using *a* as a means to this end<sup>ii</sup>. This difference is acknowledged by most schools, for instance Peirce, who states that

An Icon is a sign which refers to the Object that it denotes merely by virtue of characters of its own, and which it possesses, just the same, whether any such Object actually exists or not. It is true that unless there really is such an object, the Icon does not act as a sign; but this has nothing to do with its character as a sign. Anything whatever, be it quality, existent, individual, or law, is an Icon of anything, in so far it is like that thing and used as a sign of it.  
("Syllabus", 1903, EP11, 291; 2.247)

Here, similarity as well as its utilization in sign reference are necessary prerequisites for the Icon, but only taken together do they become sufficient prerequisites. In the other great phenomenologist Husserl, we find a similar distinction in the sixth *Logische Untersuchung*:<sup>iii</sup>

The sign has in general no community of content with the thing it signifies; it can stand as readily for what is heterogeneous, as for what is homogeneous with itself. The likeness [Das Bild] on the other hand is related to the thing by *similarity*: where there is no similarity, there can be no talk of a likeness, an image. [...] It would be a descriptively wrong notion of the matter, to think of the whole difference as lying in

the fact that the same intention which, in the one case is tied to the appearance of an object *like* the object referred to, is in the other case tied to the appearance of an object *unlike* it. For the sign, too, can be like what it signifies, even entirely like it: the sign-presentation is not thereby made into a presentation by way of likeness. A photograph of the sign *A* is immediately taken to be a picture of the sign. But when we use the sign *A* as a sign of the sign *A*, as when we write ‘*A* is a letter of the Latin written alphabet’, we treat *A*, despite its representational similarity, as a sign, and not as a likeness [Bild].

The objective fact of similarity between what appears and what is meant, is accordingly irrelevant: it is not, however, irrelevant where something is presented by way of a likeness [Bildvorstellung]. This shows itself in the possibility of fulfilment: it was only the recollection of this possibility which allowed us to bring in ‘objective’ similarity in this context. The likeness-presentation [Die Bildvorstellung] plainly has the peculiarity that, when it achieves fulfilment, the object which appears before it as likeness [“Bild“] gets identified through similarity with the object *given* in the fulfilling act. Having held this to be the peculiarity of a presentation by way of likeness [Bildvorstellung], we have admitted that *fulfilment of like by like internally fixes the character of a synthesis of fulfilment as imaginative*. (LI, 711)

Similarity is not sufficient to define an icon - a Husserlian “Bild” - for also mere signs (*Zeichen*, which in Husserl do not possess any iconic content) may share similarity with their object. In order to function as a *Bild*, similarity needs to be invoked by a certain type of conscious act, imagination, which is defined by addressing its object “durch ähnliches”. Thus, Peirce as well as Husserl agree in the need for a further determination of the Icon than mere similarity. In Peirce, it is the functioning of a phenomenon as a sign for a similar object; in Husserl it is the notoriously asymmetrical concept of intentionality incarnated in a certain subtype named *Bildbewusstsein* which introduces the asymmetry (more about Husserl’s concept of *Bild* in chapter 14). Thus, there is a seminal difference between exactly which kind of support similarity needs in order to become an icon. In Peirce, the sign character is carefully defined without any reference to consciousness; in the still pre-egological Husserl of the *Untersuchungen*, similarity is defined objectively, but not so imagination, which is seen as an intentional act with a certain kind of “Erfüllungssynthese”, that is, defined by phenomenological consciousness (a not yet transcendental consciousness,

it must be admitted). The Peircean solution introduces the asymmetry not by means of an intentionality-like concept, but through the pragmatic concept of “use as a sign”, elsewhere “function as a sign”.<sup>iv</sup> Implicitly, then, Peirce makes the concepts of “use” and “function” more broad than (human) consciousness, true to his naturalized semiotics. For instance, the well-known biological phenomena of mimicry would by his definition (but not so by Husserl’s) be unproblematic instances of iconicity<sup>v</sup>. To us, the Peircean solution is the one to be preferred in order to avoid any dualism between man and nature or the like, and it seems quite likely that Husserl’s idea may be reinterpreted in a Peircian frame (so as to make intentionality a concept depending on the more general concept of a (teleological) system). On the other hand, Husserl’s rendering of the special character of the *Bild* makes apparent an important feature which is in Peirce (at best) more implicitly present: similarity between two phenomena and the use of one as a sign of the other are not sufficient if just added as two independent features. To make up a *Bild* - or an icon, we could say - a sign must signify *through* its similarity to its object. We shall return to this elsewhere to concentrate on that other defining feature of iconicity, in addition to its intentionality/use/function part: its *similarity*, whose objectivity both authors invariably stress.

It is probably not to say too much to state that similarity has had a bad press during the last century or so. Many currents in recent philosophy, psychology, linguistics, etc. have seen the objectivity of similarity as highly questionable and has consequently sought to eliminate the concept as a piece of common-sense ideology, of a simplistic folk theory of signification. The attack has come from two principal sides. One is what could be called the Nietzschean side in general, claiming that similarity is only a construct by a weak mind in order to control an overwhelmingly non-self-similar ontological Being. In Nietzsche himself, we find the prototype of this idea in his ontological concept of the world as *werdende*, as a current of constant change, in which it is of course impossible to isolate stabilities other than by means of artificially stiffening and controlling what fundamentally cannot be controlled. This idea has been prominent in various existentialisms, nihilisms, vitalisms, *Lebensphilosophien*, and the like throughout our century and one of its latest incarnations is of course the famed “philosophies of difference” which teach that difference is always presupposed by any identity or similarity. In this kind of thought, similarity is most often identified with identity as being part of the despised

“Identitätsphilosophie”; by this operation all the non-trivial difficulties in the concept of similarity are concealed by reducing it to the trivial idea that  $A = A$ .

In linguistics and phenomenology, two traditions closely related to the history of semiotics, the anti-psychologism necessary for the very birth of these two traditions as autonomous disciplines (in, for instance, Hjelmslev and Husserl) implied the refusal of any attempt to account for semantic content by means of psychological representations. This crucial idea has been central for the idea of semiotics as a discipline, supported by the equally strong anti-psychologism in Peirce’s increasingly influential semiotics. The interesting and often overlooked fact is that this foundational and necessary antipsychologism has imbued semiotics with an anti-iconic tendency throughout most of the 20. century, in so far as iconicity has very often been spontaneously identified with psychological imagery. The surrounding scientific climate, moreover, served to underline this tendency: in the philosophy of mathematics, in philosophy of science (logical positivism, for instance), in quantum theory, and many other scientific currents, the abolition of iconical intuition of the object became conceived of as a necessary prerequisite for thought to become scientific. In semiotics, this anti-iconicity gave rise to a thoroughgoing conventionalism. Strangely enough, this semiotic conventionalism went hand in hand with the 60s reinterpretation of Saussure’s - psychological! - version of linguistic structuralism, so that anti-iconism’s roots in anti-psychologism were forgotten and replaced with a conventionalism teaching that all signs were due to “codes” having the character of general social conventions and instantiated in the single language user’s psychology. The whole critical impetus hopefully connected to this structuralism was concentrated in its resistance to iconicity interpreted as a resistance to ideology (to “imaginariness”, to “Western metaphysics”, to “effects of reality”, etc.). Despite currents of dissent (Lévi-Strauss’ insistence on motivation in signs or Lyotard’s on iconism (“figure”)), this particular brand of anti-iconism was a commonplace of most variants of 60’s structuralism (Greimas, Barthes, Lacan) as well as so-called poststructuralism (Derrida, Deleuze, Foucault).

Another line of attack on the notion of similarity has come from almost the opposite side of philosophy, analytical philosophy. The idea of a purely symbolic calculus as the ultimate aim of science and philosophy has been thriving at least since Leibniz, but during the last century this idea has enjoyed greater prominence than ever before. The history of this idea is long and can not be mapped in detail here, but some crucial points can be

sketched out. A source for it is, of course, the influential success of Newtonian mechanics which gave rise to a lot of philosophical attempts at explaining the reasons for this success. One of the ideas was the algebraic form of Newton's laws. Taken together with Descartes' analytical geometry which made transformations between geometrical figurae and algebraic expressions possible, this indicated that a formulation in terms of algebraic calculi were the ultimate aim for a science to be successful. This - in itself, sound - idea was sharpened through a series of developments in the 19th century. First, the problem of formalizing imaginary and complex numbers gave rise to the construction of autonomous algebra in the first half of the century: the insight that algebraic structures may be investigated with no reference to what the algebraic symbols might be used to symbolize, yielding the famous results of group theory. Second, the development of non-Euclidean geometries by variations on the famous parallel-axiom in Euclid's system. Originally these geometries sprang from the attempts at showing that the axiom might be proved as a theorem on the base of the simpler Euclidean axioms; one way to show this would be to assume the contrary and derive a contradiction. This procedure did not, in fact, result in contradictions, but merely in new, consistent, formal systems which could now be interpreted to yield Lobachevski and Riemann geometries, respectively. The crucial point now was that in these new geometries, the symbols of the old Euclidean system were to be given entirely new interpretations. What was in Euclid a straight line, for instance, became in Riemann a great circle. Thus, the interpretation of algebraically expressed propositions tended to be marginalized, a tendency which developed in different versions and degrees in the formal logic of Frege, Peirce, Schröder, Russell, etc. around the turn of the century. The idea of a purely formal reading originated in Moritz Pasch's scepticism against intuition - and rose to metamathematical fame in Hilbert's famous idea of the possibility of making mathematical proofs by a mere "formale Redeweise" - a formal mode of reading - in which the symbols involved were treated as mere letters equipped with certain rules of transformations, bracketing interpretation during symbol manipulation. It is necessary to emphasize that this whole development is extraordinarily fertile and by no means contrary to the idea of similarity *in itself*. The vast research in the autonomous regularities of algebra, symbol systems, and formal logic is one of the richest developments in science during the last centuries. But somehow two extreme versions of this ingenious idea emerged. One was that formalization was purely logical in a very restricted use of the word, as meaning consisting in a purely conventional, symbolical language, equipped with a purely

combinatorial syntax without any semantic implications. Another was that formalization is not only crucial to science, but formalization *is* science, so that the very interpretation of formal systems tended to be conceived of as a source of error to be avoided. In Hilbert, it was still the case that the “formale Redeweise” was only to be maintained within proof theory - in the previous determination of definitions, of axioms, rules for the manipulation of symbols, etc., the interpretation of the terms was ineradicable, as well in the subsequent understanding of the conclusion proved<sup>vi</sup>. But in many heirs to his formalist program, this crucial distinction was forgotten, and the ideology gradually spread that, in establishing a formal calculus, the very aim was to *exterminate* intuition, not merely to control it. In the humanities, this idea spread through logical variants on structuralism, cf. for instance Hjelmslev’s formal rendering of Saussure, in which the mere algebraic dependencies between terms was all linguistics might hope to map. All in all, it is no wonder this overall tendency to privilege symbolic and algebraic calculi at the expense of interpretation and intuitive presentation became hostile to iconicity and its basis in similarity. Thus, we find in two major figures in analytical philosophy, Quine and Goodman, attempts at reducing the notion of similarity completely - just like we in psychological or logical structuralism, for instance Greimas or early Eco, find analogous ideas.

In recent years, a new “morphological turn” or even “iconic turn” as a part of the vast domain of cognitive science has changed the picture<sup>vii</sup>. Here, continuous models not reducible to algebra are introduced alongside feature-preserving mappings of such models between (mental) domains – in cognitive semantics, cognitive linguistics, in the Peirce renaissance in semiotics, etc. But still the anti-similarity movement is strong, both in its Nietzschean and its analytical variants.<sup>viii</sup>

Let us examine the famous arguments of Goodman (1972) which have often, in an American context, been conceived of as the definitive burial of similarity, his “Seven Strictures of Similarity” in which the harsh verdict goes as follows: “Similarity, ever ready to solve philosophical problems and overcome obstacles, is a pretender, an impostor, a quack.” (437)

The first of the seven arguments runs as follows: “Similarity does not make the difference between representations and descriptions, distinguish any symbols as peculiarly “iconic”, or account for the grading of pictures as more or less realistic or naturalistic.” Here, Goodman’s idea is that the conviction of resemblance as “the necessary and sufficient condition for representation is so deeply engrained that the evident and conclusive

arguments to the contrary are seldom considered” (ibid.). Now, this conviction is at least not shared by any of the two great phenomenologists Peirce and Husserl, as we have already seen: each of them makes similarity a necessary but not sufficient condition for representation - and only for certain aspects of representations, namely the iconic ones. Accordingly, Goodman’s argument precisely presents examples of resemblance lacking the asymmetry of the sign function: “Yet obviously one dime is not a picture of another” etc. He realizes that this only proves that resemblance is not sufficient to define representation, and then turns to the idea that resemblance *and* reference should be sufficient. His example here, curiously, has exactly the same character as Husserl’s with the A above - it involves the *suppositio materialis*:

Consider a page of print that begins with “the final seven words on this page” and ends with the same seven words repeated. The first of these seven-word inscriptions surely refers to the second, and is as much like it as can be, yet is no more a picture of it than is any printing of a word a picture of another printing. (ibid.).

But Goodman draws completely different conclusions from the example than does Husserl. He hastily concludes while continuing to the next issue:

Still, once pictures are somehow distinguished from other denotative symbols - and this must be by some other means than similarity - does not comparative naturalism or realism among pictures depend upon their degree of resemblance to what they represent? Not even this can be maintained. (438)

It is strange that an heir to the Frege tradition like Goodman does not see that it is the oblique reference (“When I say “A” I am referring to A ...”, etc.) so crucial to the Fregean distinction between *Sinn und Bedeutung* which is invoked here - and which is, of course, a type/token relationship, not an iconic relation. His argument may be summed up as follows: neither similarity nor the sum of similarity and reference is sufficient to define a picture. In this, he is perfectly right. But his conclusion that icons do not involve similarity at all does not follow from this. In both Peirce and Husserl, the defining feature is similarity in a signifying and referring function, which is not the same as the mere aggregate of similarity and reference. The reference of the picture is *dependent* on similarity; in Husserl’s vocabulary the reference of a picture is an “*unselbständige Inhalt*”

because it depends on the similarity. Of course this is not the case in all kinds of signs, for instance in the *suppositio materialis* which both authors use as an example and where the icon is merely *mentioned* (or, object of an act of *Nennen*) and thus does not *function* as a sign. In these cases, the reference takes place as a result of deictic - or, in Peirce's wording, indexical - sign use. Thus, the failure of Goodman is here not to recognize that there are several different ways of referring (iconically, indexically, symbolically, at least). This fault is then, in Goodman's hasty style, mixed up with another in the argument already quoted. Similarity should be independent of the degree of realism of a representation for reasons of cultural relativism: realism is a function of culturally specific systems and hence similarity is an effect of such systems and not the opposite way around. This crude argument overlooks that the fact that similarity is "culture-dependent" does not make it a mere effect of cultural norms. Cultural norms *require* similarity in their description because culture consists in people acting similarly in some respects; one could say that one culture differs from another because it emphasizes other similarities. In that respect, the similarities perceived are of course "culture-dependent", but this is merely because the very notion of culture involves systems of similarities. The very concept of a *norm* presupposes similarity to the extent that it requires that similar cases be judged similarly. So to say that "similarity is relative, variable, culture-dependent", merely amounts to saying that any *particular* judgment of similarity is dependent on the classes of similarities envisaged, which is a mere truism, more apt, in fact, to dissolve the concept of culture than the concept of similarity.

Now, the "second stricture": "Similarity does not pick out inscriptions that are 'tokens of a common type' or replicas of each other." Of course, the token-type problem involves the problem of nominalism versus realism, and the very terminology of token and type is a (probably unconscious) Peircean heritage. Here, Goodman invokes various variants on written types, such as for instance a B, a B where the middle horizontal line is not attached to the vertical bar, and an O - and, again hastily, concludes that the second B is topologically more like the O than the B proper, because the first two both possess one interior part only, the second two:

O B B

Nelson Goodman's topological example

Goodman simply fails to see here that more than one topology exists; for instance a topology distinguishing singularities would not hesitate to identify the to Bs as having similar (but not identical) systems of singularities, different from the O. In fact, Goodman's example does little more than say that a green circle and a red circle are not similar, because one is green and the other is red. But both are still round. The problem is, of course, to focus upon the right level of comparison, and this is not always as easily done as in this deludingly simple example. In fact, typefaces constitute a very complicated case of similarity, as argued by Douglas Hofstadter (1985) and myself (1992) - but complexity is not an argument against similarity either<sup>ix</sup>. Goodman's topological deliberation permits him to conclude that

I suspect that the best we can do is to say that all inscriptions that are *a*'s must be alike in being *a*'s. That has the solid ring of assured truth, but is hardly electrifying. Moreover, notice that to say that all *a*'s are alike in being *a*'s amounts simply to saying that all *a*'s are *a*'s. The words "alike in being" add nothing: similarity becomes entirely superfluous. (439).

This conclusion displays an overall strategy found in similar versions in various anti-similaritarians: "similarity" can be reduced to identity. But this short-circuit overlooks the non-trivial fact that many propositions of the form "All A's are A's" conceal complex cognitive skills used to detect objective similarities. "All A's are A's" is not trivial, because in this proposition, the first "A" refers to tokens (which may vary widely), the second "A" to the type; and the question at stake is: which bundle of (different, to be sure) similarity-preserving transformations connects the various subtypes of A's with each other? Or to put it differently: how do we recognize a given token A as a type A when we have no access whatsoever to an extensional definition of A-ness, that is, to the "set of all A's", the unproblematic existence of which (and access to which) Goodman is much too quick to presuppose. This old extensionalist trick of trying to define similarity by the set of individuals which is said to possess the quality in question invariably fails, because this set can never be defined without recourse to that very quality (did anybody ever investigate, for instance, the set of all red objects in the world, before becoming able to use the word "red"? - that is, it does not escape a *circulus vitiosus*).

The “third stricture” says: “Similarity does not provide *the* grounds for accounting two occurrences performances of the same work, or repetitions of the same behavior or experiment.” The structure of the argument is the same as in the first stricture, as supposed by our italicization of “*the* grounds”. Of course similarity is not sufficient, it takes a supplementary indexical indication of which aspects of similarity are relevant. “Repetitions of the same behavior, such as hitting a tennis ball against a barn door, may involve widely varying sequences of motion.” (439). Actually, in this stricture Goodman does not draw any distinction between two issues involved: kind of similarity and indexical reference. When he sums up “In each of these cases, the grouping of occurrences under a work or an experiment or an activity depends not upon a high degree of similarity but upon the possession of certain characteristics. In the case of performances of a Beethoven symphony, the score determines what those requisite characteristics are ...”, he overlooks the fact that the score in this example actually performs two tasks: it determines “requisite characteristics” which we must still suppose can be instantiated in a host of variants which consequently will be similar with respect to a subset of those characteristics - and it codifies this set of characteristics by making them explicit and indexically attaching a stabilizing name (“Beethoven’s xth”) to them. Thus, all in all, this “third stricture” is no argument against similarity at all; the fact that “... the principle of classification varies with our purposes and interests” does not imply that there is no similarity at stake in each one of such cases, and the similarity then will be relevant to a standard selected by the *purpose or interest* in question (notice these categories and their relatedness to Peirce’s *sign function* or Husserl’s intentional *Bildbewusstsein*).

The fourth stricture is more controversial: “Similarity does not explain metaphor or metaphorical truth” (440). Here, we find Goodman’s most famous denial of similarity: “Anything is in some way like anything else”. This leads him to conclude, like in the second stricture, that similarity is the *result* of a process, be it similarity between tokens or the parts of a metaphor, rather than its prerequisite: “In both cases a reversal in order of explanation might be appropriate: the fact that a term applies, literally or metaphorically, to certain objects may itself constitute rather than arise from a particular similarity among those objects” (440). There is an interesting tension here between the two parts of Goodman’s argument. The first is actually a statement of a stunning extension: “Anything is in some way like anything else”. Of course, Goodman intends by this statement to reduce similarity to insignificance because of its omnipresence, but if we take his

words at face value, it is a statement of enormous a priori breadth. It is of course impossible empirically to undertake the task of actually comparing all known phenomena two and two; how then is it possible confidently to state this amazing theory? The idea is probably that if the *tertium comparationis* is chosen sufficiently general, some property will show up shared by both. Yet, we can not presuppose that this property will in all cases be an empirical property (given one phenomenon, we can simply define another phenomenon by giving it another empirical property, for each property of the first one - a property chosen beyond the limits of any chosen similarity function). Consequently, the property shared must in this extreme case be of an a priori character, having no opposite. For instance: both are phenomena. Both have a certain form (the formless being also a form type). Etc. Given this deliberation, we can surely subscribe to Goodman's a priori law: anything is in some way like anything else. But then this is in flagrant contradiction with his consequence: that metaphorical use should constitute similarities rather than being constituted by them. If similarities between anything always already exist, then metaphor must be constituted by the selection of certain among these similarities at the expense of others. This discussion is still relevant today when for instance Lakoff's cognitive semantics claims that similarities are not preexisting but are created by metaphorical mappings from one domain onto another. But if Goodman's a priori law is really correct, this cannot be the case: the similarity chosen must in some sense of the word exist beforehand, as a potentiality. This would, of course, be Peirce's solution and it seems evident that it is pertinent for most everyday judgments of similarity. The fact that it has never before been asserted that this orange on the table before me is similar in shape to the moon (given a certain granularity of similarity classes), might cause sensible souls to see me as a genius for creating metaphors, but, modestly, it seems strange that this similarity should be something created by me. I merely discover (no great effort) this similarity by applying a certain *tertium comparationis* (a circle, give or take a certain rate of deformation). In rare cases, of course, it may take great pains to establish a new complicated *tertium comparationis* to see a similarity (Newton discovering the similarity between the movement of the apple and of the heavenly bodies, Eliot discovering the similarity between cruelty and the growth of April flowers) but this hardly implies that the similarity was not there before. Of course, artists will rage against this conclusion, for does it not imply that the work of art is not their creation, was it already in some sense a possibility before their effort? This is probably - if we for a moment allow ourselves the Nietzschean pleasure of getting personal - one of the reasons why it is so

hard for many to give up the idea of similarities as something constructed: by doing so, one also gives up the self-flattering romantic-nihilist idea of the subject as artist, as genius, as creative *Übermensch*.

The fifth stricture deals with similarity in science: “Similarity does not account for our predictive, or more generally, our inductive practice” (441). Goodman sets out by stating that the fact that the future will be like the past is often regarded as highly dubious - but contradicts this idea: “... while I am sure the future will be like the past, I am not sure in just what way it will be like the past. No matter what happens, the future will be in some way like the past.” This idea Goodman illustrates by drawing a curve plotting the relationship between two sets of variables. Now, there will exist a curve covering any possible extrapolation of the sets of data already given, he argues<sup>x</sup>. The idea seems to be that curves are our means for retroactively assuming a similarity, which was we were not able to see during the process, and of course it is mathematically correct that any amount of points in the plane (if we leave out the possibility of several points with same x value) can be connected with one line with increasing x-variable. But this argument proceeds as if science had never, in a large number of cases, established any *laws* delimiting this infinite set of possible curves to a small class of related curves. “Along which, among countless lines of similarity, do our predictions run?”, Goodman rhetorically asks, and of course this question can only be answered in each specific case. When letting go of a stone, I of course suppose it will behave similarly to the stone I let go of yesterday, that is, according to the same law of gravity, - Peirce’s favourite example - and hence will follow a parabolic trajectory. As a matter of fact, Goodman’s 5<sup>th</sup> argument is highly anti-scientific, behaving as if no scientific laws had ever been established.

The sixth argument: “Similarity between particulars does not suffice to define qualities” . This is not the fact, Goodman argues, because it does not follow from the fact that each two of several particulars are alike, that they are all alike. Objects may pairwise have a color in common without all of them having any color in common. Hence, “Dyadic likeness between particulars will not serve to define those classes of particulars that have a common quality throughout.” This is correct: similarity is not transitive. Similarity cannot define quality, it is rather defined by it. Goodman’s argument here assumes that it should be possible to judge two objects alike without in any way stating in what the similarity consists - which is, of

course, not the case. Even in the cases in which it might be difficult to point out the precise similar feature, as between parent and child, it is possible to reason about it and gradually close in on it: “it is something about the form of the eyes” etc. Even if there thus might be cases in which the tertium is not obvious, it must exist as a not-yet-fully-articulated tacit knowledge prerequisite to the similarity judgment.

The seventh and last stricture: “Similarity cannot be equated with, or measured in terms of, possession of common characteristics.” Even if it was precisely what Goodman was about to do with the Beethoven oeuvre in the 3rd stricture, this is proposed as the more general, conclusive argument, underlying some of the earlier ones. The commonsense idea of similarity between two things - that they have at least one property in common - is once again contrasted with the idea that any two things have a property in common and that consequently this is insignificant. An attempt to rescue similarity by saying that two things having more properties in common are more alike than two things having less properties in common (443) is counterargued by the idea that “any two things has exactly as many properties in common as any other two”. Goodman gets this idea from the extensional definition of property by class membership (a property simply being defined by a subset of elements), and each element in a given universe of elements is a member of exactly the same amount of universe subsets as any other. This set theory triviality is then supposed to be the definitive argument, for

I have, indeed, been counting only first-order extensional properties.(...) The inevitable suggestion that we must consider intensional properties seems to me especially fruitless here, for identifying and distinguishing intensional properties is a notoriously slippery matter, and the idea of measuring similarity or anything else in terms of number of intensional properties need hardly be taken seriously. (444)

Now, it is not necessary to maintain that the idea of similarity needs a quantitative measure to be sustained, but it is comical that Goodman at this late point refuses to concern himself with intensional similarity because of its slippery nature - of course this is where the whole problem lies when extensionally defined properties, as he rightly claims, make the concept trivial, just like it makes the whole idea of properties trivial (because the property "red" should then be defined by the set of all red objects, and this,

again, is a set like all other sets and nothing in particular distinguishes it from any other set. Then, how do you zoom in on this set, knowing nothing about redness before you know the set with all its elements ...). Of course, he adds, one could restrict oneself to counting the *important* properites - a solution he discards rightaway because importance is a “volatile matter”. But of course similarity is relative to what in a given case is considered “important” - and this of course lies in the Peircean and Husserlian framing of similarity in icons by "function" and "intention" respectively.

In a concluding remark, Goodman sums up his alleged results: similarity is much like motion: “Clear enough when confined by context and circumstance in ordinary discourse, but hopelessly ambiguous when turned loose.” (444). Similarity like movement is meaningless taken per se: “Talking about motion is pointless if no frame of reference is established. (...) We have to say what a thing is to the left of, what it moves in relation to, and in what respects two things are similar.” We could not agree more. Yet, this is not sufficient for Goodman, because unlike motion, similarity cannot be saved by recognizing its relativity: adding a specification of the property in common, similarity is simply rendered superfluous (444). To this, Goodman once more adds the superfluous argument that circumstances alter similarities (of course they do), and concludes

Relativity, even volatility, is not a fatal fault. Physics does not stop talking of motion merely because motion is not absolute. But similarity, as we have seen, is a much more slippery matter. As it occurs in philosophy, similarity tends under analysis either to vanish entirely or to require for its explanation just what it purports to explain. (445)

Now, one could argue that physics does not stop talking of matter either, even if it be slippery. And Goodman has not, in fact, proved that similarity evaporates under analysis. The idea is that the concept of common property makes it vanish. But a central point is that common property is not enough to define similarity: this property should be measured in relation to a certain granularity on the property scale in question. I might say that two objects are similar because they are both red (two traffic lights, for instance) even if it is not precisely the same red shade. But the property in common thus depends on a certain topology on the quality scale in question, in this case the color continuum. In some cases, this topology may divide the relevant continuum in very few fields, for instance dark and light, in others, it may require thousands of shades, in some cases the property classes overlap, in others

they do not. This still makes it correct to assume that similarity is a mere shorthand for something else - but it is not a shorthand for something equally simple (for instance common property), because a given judgment of similarity implies a certain set of possible topologies on the property space (many different granularities may make the two red colors “similar”). Thus “similar” means “invariant under certain transformations in quality space with a certain topology and granularity”. But this is not trivial. And this is why similarity is not eradicable: it is the phenomenological mode for such invariances to appear. In many cases the topology and transformations in the property space in question are evident - and in these cases the concept of similarity of course is trivial - but in other cases similarity is a sign to be interpreted; the precise character of the property space in question and its topology and transformations is a question to be investigated. Thus, similarity calls for further explanation<sup>xi</sup>. In the easy cases, the explanation is of course, as are any trivial questions, trivial.

In the history of semiotics in our century, the preference for a purely symbolic calculus at the expense of iconicity got a strong wind since the spread of formalism in the interwar period. In the American context, the logical semantics taking its point of departure in Carnap saw truth-conditions of expressions in purely formal systems as the decisive feature of scientific endeavors in semantics, later to terminate in Chomskianism. In the European context, the formalism of Hjelmslev, with its claim that all language description should proceed in a simple algebra, was a forerunner of what was to come in structuralism, both in linguistics and in the structurally inspired humanities more broadly. This tendency had its heyday in the sixties with French structuralism, generative grammar, and symbolic Artificial Intelligence, supported by its biological counterpart in DNA-based neo-Darwinism, when all the world might seem to be one symbolic calculus - but the general tendency seems to be that it has been slowly receding since then, allowing for a comeback of an interest in iconicity. But still, the anti-iconic tendency remains strong, and in semiotics it is necessary to respond to the arguments of the extreme formalists in order not to fall prey to too naïve a concept of iconicity. Probably the most extreme anti-similitary movement in general semiotics is Greimas’ theory, giving rise to the so-called Paris School. Even if the overall architecture of the theory includes a Merleau-Pontyan “*sémiotique naturelle*”, allegedly phenomenologically functioning prior to the intervention of language, still the concept of iconicity is relegated to a very superficial level of discourse. It is merely a secondary

adornment of established meaning in order to render it similar to a given (and always ideological) conception of reality, that is, as promoting Barthesian “effects of reality”<sup>xii</sup>. In this view, icons are simply seen as a secondary and necessarily illusionary addition to basic conceptual (“semio-narrative”) meaning already well-established, and all of it supposedly describable in a Hjelmslevian meta-language in which the denominations remain algebraic throughout and hence arbitrary. In contrast to this consequent and untenable position, Umberto Eco’s famous attacks on iconicity in the 60’s and 70’s (as collected in Eco 1976) are at the same time much more multifaceted and much more unclear. It almost seems as if Eco is steadfastly determined at “getting rid of” iconic signs, as he does not hesitate to say, because he brings forth a whole series of widely varying arguments, often not even mutually consistent. His “Critique of iconism” forms a part of his “Theory of Sign Production” framed in a funny semi-Marxist language of production and labor, and even if it does not figure explicitly as an argument, this overall ontology is probably crucial to his critique of iconism: iconicity, or natural, motivated, analogical signs of any kind seem to come into being “without work” so to speak. But in Marxism, there must be no free lunch, and consequently these apparently spontaneous signs must have their basis in the human production of codes and conventions revealed: they are bourgeois signs whose apparent freedom is built upon ideological suppression of underlying, more hardworking signs. It might seem like kicking a more than dead horse to counterargue claims like these nowadays, but it still has relevance because of the underlying idea that human subjectivity is responsible for all semiotic activity. This idea is not a privilege for Marxism, and one finds it in various disguises in existentialisms, (de)constructivisms and other heirs to the subjectivist strand in German Idealism on the one hand as well as in extreme formalists like Hjelmslev on the other<sup>xiii</sup> - and this is probably a very widespread reason for skepticism towards iconicity that the acknowledgment of it invariably forms part of a Copernican revolution depriving the human subject of some of its privileges.

Within this overall frame, Eco’s arguments are, as mentioned, various, to say the least. One argument goes against similarity as “shared properties” by attacking Morris’ simplified version of Peirce including the fairly reasonable statement that icons resemble their objects “in some respects” so that “Iconicity is thus a matter of degree” (Morris, quote from Eco, 192). Instead of understanding the strength of this claim, Eco sees it as a weakness because when stretched to onomatopoeias it includes “completely

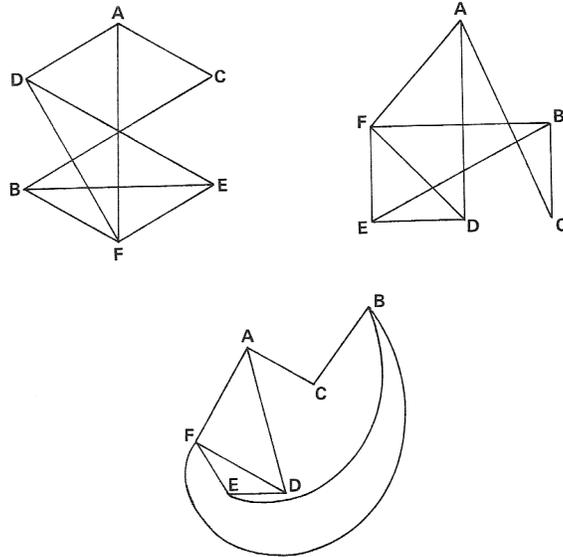
conventional" expressions. Here Eco, in a Hjelmslevian craze, compares various linguistic expressions for a cock's crowing; English /cock-a-doodle-doo/, French /cocquerico/, and Italian /chicchiricchi/; the iconic relationship of these to the cock's crowing is "very weak" (192). In fact, this positive statement is not very plausible; the onomatopoeias mentioned are all close to possible phonetic transcription of the actual sound, and they even display a large amount of similarity in between them: all of them are four-syllable words with the same prosodic structure with a long and stressed last syllable; in all of them the two first syllables begin with /k/ and finally the first and last syllable contains the same vowel (all this goes as well for Danish /kykeliky/, by the way). Eco undertakes this - very weak - analysis in order to counterargue "shared properties", and his other example is not much more convincing. In this, he compares the photo of a glass of beer in an advertisement with an actual glass of beer. The fact that the photo contains neither glass nor beer nor vapour nor coldness is not a very convincing argument against shared properties when the icon in question is actually based on a *visual* rendering of the object. Eco does, at least, admit the existence of "visual stimuli", but his explanation of their role in the sign process minimizes their importance to the extreme:

I feel certain visual stimuli, colors, spacial relationships, incidences of light and I coordinate them into a given perceptual structure. The same thing [sic] happens when I look at an actual glass of beer; I connect together some stimuli coming from an as yet unstructured field and I produce a *perceptum* based on a previously acquired experience. (193)

He later questions even the notion of "the 'same' perceptual effect" and asks if it is not better to assume that "previous learning" is responsible for my viewing two different perceptual results as the same. Even if it is the "same" thing that happens in the two cases, the sameness is relegated from the sign and made the product of the I which in turn is made a product of previous learning, that is, culture. That is, an empirically easily verified similarity in form, color, texture, etc. is replaced with a completely unverifiable piece of "previous learning". Furthermore, this pseudo-explanation does not account for why "the same thing" does not happen when I am faced with other "yet unstructured" stimuli; if Eco's idea were correct I might see beer glasses all around me. Maybe he does. This analysis shows how extreme formalism and its idea of the forming of a "yet unstructured field" (cf. the structuralist arch-idea of language's partition of an amorphous substance, standard in Saussure

as well as Hjelmslev) can be coupled unproblematically with subjectivism and, in turn, culturalism. His further examples are similarly unconvincing: the iconic rendering of a horse by means of its contour is explained by a “graphic convention” instead of a geometrical transformation of 3-D objective properties of form onto a 2-D surface, coupled with knowledge of the animal as being one concluded object, and the “sweetness” of saccharine and sugar is allegedly “not a property of the two compounds, but the result of their interaction with our taste buds”. Still, recent research in the physiology of gustation shows that it is a molecular property which is responsible for this similarity in function, namely the presence on the periphery of both macromolecules of morphologically similar “active sites” (even if this were not the case, the two tastes would still be phenomenologically similar, i.e. lie close to each other in taste space). The fact that various cultures prefer various tastes - which he adds as a culturalist argument - does not change these biochemical and phenomenological facts and cultural tastes still require similiary functions making it possible to recognize what is considered tasty in the given culture. All in all, his rejection of the shared property idea builds on a construction unluckily uniting subjectivism, culturalism and extreme formalism.

A geometrical case is now made against the notion of similarity (which he surprisingly finds a more scientific notion than shared properties - presumably because similitude has a use in geometry defined by invariance in certain transformations<sup>xiv</sup>). Here, Eco’s argument is even more coarse, to put it bluntly. A Lockean *tabula rasa* is invoked in the shape of a “naive interlocutor” or “non-trained informant” who is not able to perform the transformations required (and so unable to compare the Cheops pyramid with a small model of it, for instance). That transformations such as these should be completely conventional is now argued with the presentation of some simple graph theoretical figurae which are topologically similar to the extent that they connect the same set of points with the same set of lines (but where the points do not inhabit the same places in the plane and the lines do not have the same shape):



These graphs are of course not similar in the sense that they are invariant in scalar transformation - and this is for Eco an argument that they are not “spatially (and therefore geometrically) ‘similar’” (196). Eco probably feels the danger of trying to drive out one kind of similarity with another, for he instantaneously adds: “This kind of *isomorphism* may be called a form of similarity but it would be very difficult to assert that it is a geometric similitude. To call such a relationship ‘iconic’ is a mere metaphor” (197). Now ‘mere’ metaphor may in many cases contain genuine insight, and such is the case here. Of course isomorphism is iconic; the question is why Eco refuses to admit it. A positive answer could be that he fears a concept of iconicity which is spontaneous and substantial, maintaining a similarity without a *tertium comparationis* - this would explain the strange fact that he considers it an argument against iconicity to reveal in each case the underlying principle of similarity. Of course, Eco’s later work has shown a rationalist and well-placed fight precisely against unfounded similarity claims in various occult practices where no *tertium comparationis* and no correlative invariants under transformation are to be isolated<sup>xv</sup>. But the fear of such “similarities” should be no argument against well-founded similarities, and it seems that Eco in general mistakes the transformations guaranteeing the single types of similarities for being mere cultural conventions. Thus, in addition to the earlier arguments which pointed to large constructive competences on the part of the ego, this Lockean construction makes of the I a mere tabula rasa.

But more arguments follow. Eco confronts himself with a version of Peirce’s iconicity and criticizes Peirce for not abandoning his reference to

objects in his definition of it, because it makes iconism an “umbrella-term that covers many different phenomena such as a mental image, a graph, a painting.” (199) This argument is very strange; it is precisely the reference to similarity with the object which gives the unity of Peirce’s definition and which allows it to include the various phenomena mentioned. There are two points in this: one is what we have already touched on and what Eco emphasizes over and over again: that a transformation between sign and object “... does not suggest the idea of natural correspondence; it is rather the consequence of rules and artifice” and hence is ‘mere’ convention. But rules can never be the *causes* of similarity, for they presuppose it in so far as their general formulation is of the type “Do *the same* as what is prescribed here ...”. The same goes for his emphatic conclusion “Similitude is *produced* and must be *learned*” - it would be impossible to teach anybody anything if one were not allowed to say “Now, do *like I do* ...” and thereby presuppose similarity<sup>xvi</sup>. This argument, of course, is also valid against Goodman's similar claims. Another point is not stated explicitly, but it might seem as if Eco’s implicit contrast to Peirce’s alleged “umbrella” term is a rather narrow idea of iconicity restricted to the domain of vision only. This of course brings him in conflict with the culturalism stated so far, because vision and the possession of eyes can hardly be interpreted as a cultural convention which must be learned. This comes to the fore in his next argument which is aimed against the symmetry of certain similarity phenomena which must consequently be excluded from the concept of iconicity: mirror images, doubles, tokens of the same type<sup>xvii</sup> and expressive signs. This argument is of course perfectly valid, cf. the central phenomenological distinction between symmetrical similarity and asymmetrical iconicity; yet it is no argument against the latter that it depends on the former from which it must be distinguished. But in this almost sound argument totally new criteria all of a sudden sneak in: “Secondly the presumed ‘iconism’ that should govern the correspondence of a token to its type is not a *theorem* that semiotics could demonstrate; it is one of its *postulates* [...] The rules of this recognition are deeply rooted in the mechanisms of human perception and must be assumed as already given in any semiotic enquiry.” (203) Here, semiotics is all of a sudden presented as a deductive doctrine with postulates, axioms, proofs, theorems etc., and token-type relations are wholesale reduced to physiology, that is, biology. But why should it not be important to guarantee the soundness of the postulates of one’s science - which in this case are empirical matter from other sciences (cognitive psychology)? This sudden naturalist tendency, hastily forgetting the *tabula rasa* ideas,

culminates in the refusal of iconicity in the so-called “expressive” signs - Kandinskyan lines signifying emotions and the like: “We may consider all these cases of empathy as mere *stimulations* that should be studied by the physiology of the nervous system.” (203) - as if they were not semiotic phenomena at all. A strange theory: seeing a picture of a beer as referring to a beer is a complicated cultural phenomenon, while seeing a drawn line as referring to a complicated psychological emotion is something perfectly natural and automatic. Just like some icons are thus ‘mere’ conventions for a completely blank Locke-like culturalized subject, other icons are ‘mere’ neurological phenomena in a naturalized physiological subject brimming with innate semiotic competence. It is a wonder that these two subjects may thrive in one and the same head. The problem of cutting the cake and dividing the iconic signs amongst these two ‘mere’ categories is of course the numerous cases in which both are active and hard to distinguish. Eco elaborates on conventionality at length, making clear his contention that this is the semiotically interesting field (the natural “signs” not being signs but something even simpler than Pavlovian conditioned reflexes), but finally embarks on still another type of argument by stating that measured on very general (we would call them formal ontological) terms, similarity becomes ubiquitous: “... on the level of very elementary formal phenomena such as high-low, right-left, or long-wide - everything resembles everything else” (212). Perfectly correct as this is, Eco takes it strangely enough as yet another argument for “arbitrary underlying codifications” and is close to concluding with a complete conventionalism. Crude as it is, he finally offers a totally different classification between grammar-oriented and text-oriented procedures, in which iconicity must fall on the text-oriented side because of its lack of distinct elements and compositionality. Here, he suddenly admits that “the drawing of a horse can be understood even by those who are not acquainted with visual conventions ...” (214) because it is “*not further analyzable* either into signs or into *figurae*” (215). Now, the equivalent of an iconic sign is not a word or a phrase but a text (why not a phrase in many cases, actually, cf. traffic signs?) whose units “are established - if at all - by the context” (216). It is difficult to see how this analysis at one and the same time can save iconic signs and reject their iconicity; the idea is probably that the context here is supposed to do the work which codes, conventions or physiology cannot do. But how does one recognize similar contexts if not by means of similarity (remember we are beyond conventionality now, so we must not posit codes for recognizing contexts ...)

Eco’s conclusion, under the witty heading of “Getting rid of the ‘iconic signs’”, repeats the umbrella idea and adds a final stroke: it is not

only the idea of iconicity, but also the idea of a *sign* which must be discarded in favour of the notion of *sign-function*, an in itself sound Hjelmslevian notion here diversified into various semi-Marxist modes of sign production. This idea should finally dissolve the “iconic signs” because they are arguably produced by different procedures, interchangeably with other signs.

This final fallacy - to believe the product may be exhaustingly explained by the production - is as absurd as to claim that cars are not cars because some of them are produced by Germans, others by Japanese, but it permits us to conclude Eco's critique. His umbrella term thesis rests on this mode-of-production theory - and then the wildly differing critiques of iconicity might be understandable (to himself) as pertaining to different modes of production (even if they were not presented in this lingo). Conventionality, culture, and subjectivity is one source for apparent 'iconicity', the physiology of the nervous system is another, formal ontology is a third, and the context of signs constitutes a fourth. Even if a wedding of some of these positions into a culturally formed subject strangely and completely independent of its own natural, physiological bases can be constructed and is indeed typical for the period, then no construction can involve all of them: where should the formal ontological constraints intrude: in the subject? - this would attack culturalism - in the nervous system - this would attack the independence of nature and culture. Where would “context” come in? - not in culture which is conventional through and through, not in the physiology of perception since no semiotics is possible here ... Eco's iconic cleansing project is doomed to fail, not only because he attempts to dissolve a category phenomenologically well-defined, but also because his umbrella argument ends up umbrellaing his own implied ontology into a complete quagmire of a crude nature-culture dualism equipped with self-contradictory annexes. What can more generally be learnt from Eco's failures is that mode-of-production explanations in semiotics, be it of semi-Marxist brand as is the case here, be it of Nietzschean brand in various types of Lebensphilosophie and deconstructionism, or be it of neurophysiological or any other brand, can never stand alone but must be based on a prior phenomenological descriptive rendering of the field making coherent the objects, distinctions, and in general phenomena involved.

*Umberception and Econicity – the conversion of an iconoclast*

Eco thus formed an anti-iconic front figure in the “debate on iconism” taking place in semiotics in the 60's and 70's. In a recent book, *Kant and the*

*Platypus*, however, Eco explicitly changes his basic conceptions on the issue. The main tenet of the book is the integration of a whole series of issues left out of consideration alongside with iconicity in Eco's early work: reference, cognition, truth, prelinguistic perception - rather serious and far-reaching questions, it must be admitted. In the present book's last chapter, Eco recounts an outline of his and his compatriots' position at the time, and I think it is fair to say that he to some extent misrepresents the scope and the radicality of the anti-iconism of the period, probably out of the same embarrassment that makes him characterize conversions from this semio-structuralism and to Peircean iconicity in some of his fellow-travellers as the result of confessions in a Stalinist show trial (341). This somewhat shrill description should probably be read as a testimony of the malaise inherent in the revision of one's own viewpoints, for it is, in fact, exactly the same conversion confession that is Eco's own purpose with this book: the admirable task of revising his 1976 position on iconicity. It is evident, furthermore, that a strong influence in this revision is what must be counted as one of the major developments in the semiotics of the turn of the millenium: the American "cognitive semantics" tradition (involving Rosch, Lakoff, Johnson, Turner, Sweetser, Talmy, Fauconnier, etc.). Even if only rarely using the term "semiotics", this tradition has strongly vitalized the development of a bouquet of core semiotics issues (general semantics and its relation to perception, to thought, to biology, etc.) by connecting them to the general cognitive science project. From an early point, Eco was one of the European contacts to this tradition, and he has done much to introduce it in Europe. Thus, the present volume can also be read as his contribution to this development, involving a welcome revision of his own earlier viewpoints.

Even if this self-criticism gives rise to a whole series of really interesting ideas, the book is explicitly not intended as a systematic rejoinder to the (intended) systematical *Theory of Semiotics* of the book thus titled. The six essays in *Kant and the Platypus* come in seemingly arbitrary order and with sparse internal references, even if they circle around the same central set of issues. The first is a general (ontological, in fact) meditation on being as a positive issue - in contradistinction to semio-structuralism's preference for negative determinations and its resulting hesitations towards any ontological commitments - and it concludes with a discussion of structural semiotics' arch occupation with an amorphous continuum of being to be segmented by semiotic systems. The fact that this continuum possesses a "grain", contains "lines of resistance" as given before semiosis and to some extent governing it, is the anti-conventionalist point of the still rather weak ontology (references to Vattimo are weak but not missing,

consequently) of this chapter. The second essay tackles the main problem head on: the explanation of the semantics of everyday empirical concepts (like “dog”, or, more conspicuously, “platypus”) cannot do without the (iconic) notion of “schema” like in Kant’s epistemology. The ideas from this chapter is taken further in the third essay where the Kantian impetus is reinterpreted in the light of actual cognitive science. Here, Eco constructs his own theory of the semantics of empirical concepts: they build on the prelinguistic perceptual generalisation (in Peirce’s terminology: perceptual judgment) giving rise to “cognitive types” (CT) making recognition and identification of a phenomenon possible. This stability in perception seems to form the core of semantic content of the concept, the so-called “nuclear content” (NC) involving a fuzzy spectrum of core knowledge attached to the CT. Finally, following Putnam’s idea of a linguistic division of labor, various expert bodies of knowledge about the phenomenon in question may be elaborated with the NC as point of departure (and possibly contradicting it); they form elaborated corpuses of “molar content” (MC). In the platypus example, the CT will be the perceptual type of the animal, making recognition of it possible; the NC will involve central pieces of knowledge about it (it has a beak, lays eggs, gives milk, etc.); and the MC will involve different sets of elaborated representations of it (the aboriginals’ mythological ideas of the animal’s role in cosmology, the scientific description and classification of it, etc.) - the latter possibly being subject to ongoing discussions and negotative reinterpretations. The fourth chapter recounts the polemic around the classification of the platypus raging in biology during most of the 19th century and draws some general conclusions as to the indispensability of both of Eco’s well-known semantic description types of dictionary vs. encyclopedia in the forming of empirical concepts, permitting the revision and the integration into the new CT/NC/MC framework of these two terms. The fifth essay turns towards the question of reference and takes up Kripke’s famous “ontological” theory of reference: the idea of proper nouns as rigid designators devoid of any descriptive value whatsoever. Kripke’s theory is relativized to become a regulative idea only in a more pragmatic theory of reference as subject to the same ongoing contractual negotiation between language users as content is subjected to. The final essay on iconism and hypoicons is somewhat disappointing in relation to the strong chapters in the middle of the book; we do not get the integration of the book’s insights in a broader theory of iconicity, such as might be expected from its title. Still, the essay contains a interesting distinction between two forms of icons, *alpha*- and *beta*-, respectively, so that the *alpha* signs are perceived as signs irrespectively of any explicit

intention of sign reading in the receiver (the dog seen as “a dog”, supposedly), while the *beta* signs presumes to be read as expressions of a sign function (the dog seen as a sign for a nearby kennel); this distinction apparently gives rise to the distinctions between primary and secondary icons equivalent to the distinction between “perception surrogates” and more proper signs.

Let us begin by the reintroduction of iconicity in a central role (and it probably goes without saying that I perfectly agree with Eco on that central point). The question leading to the recognition of iconicity in Eco is: “How do we assign names to things?” Simple versions of the scholastic (by essences) and the empiricist (by complexes of ideas) answers are both refuted in favour of the Kantian notion of schema. The schema is a *type* and hence no mere association of particular ideas (which would be impossible for the strong reason that empirical objects have an infinity of properties (Kant)), but it is on the other hand a result of construction and is thus no pre-given essence ready to be picked up. Eco runs through the Kantian doctrine of the reflective judgment in *Kritik der Urteilskraft* in order to underline the schema’s constructed character: the reflective judgment seeks to constitute a general concept to subsume a particular phenomenon (and it is thus a precursor to Peirce’s notion of abduction, cf. ch. 16), and in so doing, it conceives of the thing *as if* it was a part of something general. In order to do so, furthermore, it conceives of the thing *as if* it was teleologically organized.<sup>xviii</sup> In any case, this teleological and generalizing feature of reflective judgment commits it to proceed by trial-and-error - that is, in a construction of a schema which will be able to subsume the phenomenon in question. In so far, the schema becomes the general type which permits the recognition of tokens of it. This is explicitly posed as a general prerequisite of signs: well before anything can stably stand for something else (the Stoic sign definition), a type must be able to stand for a token of itself. This sound theory is, it must be added, nothing new in semiotics; it is central in Peirce (the first trichotomy) but it also is inherent in e.g. Hjelmslev’s version of “semiostructuralism” - but still it is good to emphasize it as against the widespread and fateful superstition that signs begin with physical marks referring to something else. This primary iconicity is taken as a primitive: it *defines* similarity rather than the opposite way around. Primary iconicity thus satisfies Eco’s old ambition of finding the “lower threshold of semiotics” and is described in several ways: one is the psychological description as the adequate representation of a stimulus by a sensation. The prerequisite for this is a pure “predisposition to correspond” (110). This last description corresponds to Peirce’s idea that the icon is at the

same time objective and vague, but there is an unnoticed tension between this objective and hence pre-subjective description of iconicity on the one hand and the just mentioned identification of iconicity with psychological and perceptual processes on the other. A mild conclusion here could be that this difference is not further elaborated in this book where the focus on the genesis of empirical concepts implies a natural bias towards psychology; a stronger conclusion could be that there is a problem in the fact that Eco's reintroduction of iconicity is so tightly intertwined with a reintroduction of psychological terms (which is strange, moreover, because Eco in general takes the cautious stance of seeing the mind as a black box which he, as a semiotician, abstains from peeping into). I shall return to this problem.

The schema thus satisfies the Husserlian requirement that there should be strong ties between linguistic and perceptual meaning. As is evident, this rendering of schema and iconicity lays a heavy burden on perception. Peirce's theory of perception - to which Eco returns over and over without tackling it head-on - is taken as the means to fill this gap: the relation between percept (a limit case with no autonomous mental existence in Peirce's account) and the consecutive perceptual judgment is quickly taken as a general description of the token-type relation in primary iconism.

This is taken up in the third essay where Eco outlines the most elaborated and original consequences of his iconic turn. The schema is an unsolved problem for truthfunctional semantics on the one hand just as it is for structural semiotics on the other, and the flora of schema-like concepts flowering in the cognitive semantics tradition these years (schema, prototype, stereotype, model, pattern, script, frame ...) testifies to the indispensability of schematic concepts. In so far, a schematic turn can be said to be underway, but, as Eco points out, without its proponents knowing much about the philosophical debts nor depths in the concept. The main problem, according to Eco (here I only partially agree) - in continuation with the preceding chapter - is that Kant's schematism does not account for empirical concepts (the dog, the platypus, etc.). Accordingly, he takes up the development process of such concepts - Montezuma's and the Aztecs' gradually forming a sort of horse concept after the first meetings with the Spaniards and the polemic over the zoological classification of the platypus being his two main examples. In accordance with the central role accorded to perception, he supposes that the first stable structure formed is a "cognitive type" (nicknamed CT) which is a perceptual schema, integrating a multimedial range of senses (including for instance the horse's general outline, neighing, smell, etc.). The CT, even if subject to ongoing trial-and-error negotiations, has the property of being a perceptual type, hence

prelinguistic, and hence safe from all semiotic doubt, cultural relativism, etc. True, different cultures will form different CTs, but as a rule not *entirely* different - they will still be constrained by certain “lines of resistance” as it is called in Eco’s weak ontology. Its main function is to facilitate the recognition of yet-unseen tokens of its type. The important step here is that Eco succumbs to Peirce’s insistence that the generality of the symbol is not the only generality in semiotics; it is preceded by - and conditioned by - typicality, the fact that phenomena tokens are organised in types before symbolicity and linguistic categorization further organize them. However, the CT is, due to its perceptual status, private, so how do we guarantee that a CT is in fact present? - only by the intersubjectively controllable detour of successful referring. If speakers pragmatically agree in referring to a phenomenon this must count as a proof of shared (or, in any case, sufficiently similar) CTs. This brings the next term in play, Eco’s concept for the meaning (or better, the content) of empirical terms, the Nuclear Content (nickname: NC). It is defined as a set of public interpretants of a CT (and must be supposed to feed back onto the ongoing shaping of the CT) and becomes the possibility of the attaching of a substantive expression making the content communicable. The relation between CT and NC is conceived so that CT acts as disposition for the formation of a NC, while the presence of a NC, conversely, counts as proof of the existence of a CT. (There are problems in this claim: everyday substantives abound which have NC but hardly CTs - for instance “furniture” - but this may probably be mended by a suitable theory of generalization and abstraction). The NC gives instructions for the identification of tokens of the type (its so to speak iconic side) as well as instructions for retrieval of tokens of the type (its so to speak indexical side). So it adds a considerable amount of knowledge to the perceptual CT of for instance a horse: where do we find horses, to what use are they typically put etc. The NC is still a common-sense-close notion, being subject to continuous negotiation and not necessarily internally consistent, being motivated by competing tacit folk theories, etc. The “molar content” (MC) forms the third concept of this triad and constitutes some stable corpus of complex knowledge of the object (it contains more than is demanded for perceptual recognition) and is typically parcelled out in different, sophisticated practical and theoretical discourses on the object, also subject to continuous negotiation in smaller subcultures but with stronger consistency constraints added. In this analysis, the very concept of “concept” is left to unemployment, to the extent that everyday empirical concepts are CTs, expressed by NCs, while scientific and other special language concepts are defined by various MCs. It is evident that Eco’s CT-NC complexes

display close relationship to Eleanor Rosch's "basic-level-categories": he is happy to state that they are interpretable even if primitives - and on the Kantian hand he maintains they act as general pictures acting as rules for the construction of specific pictures.

The more precise definition and description of CTs take up many efforts. CTs seem also to include qualia, basic acts (walking, jumping), basic opposition pairs (husband/wife), frames governing events, they must contain Gibsonian "affordances" (what may be done with the phenomenon in question), they include face recognition, recognition of musical styles, fictive persons and artworks; we often use truncated CTs completely separated from NCs. One and the same CT may emphasize iconic, propositional and narrative meanings. CTs governing empirical concepts are juxtaposed "cultural" concepts including abstract concepts, cultural relations, events, etc. CTs are compared to cognitive semantics concepts like stereotype and prototype and it is proposed that CTs have maximum extension and minimum intension, while the opposite is the case for prototypes.

These sketchy extrapolations of the CT concept display some weaknesses. First, CTs now seem to include a whole series of semantic phenomena traditionally seen as farther from perception: frames, opposition pairs, functional properties etc. The fact that phenomena like these in fact do form Cognitive Types leaves little doubt; but the idea that they spring almost automatically from perception seems a lot weaker in these more conceptual cases. The basic tie between CT and perception thus seems to be loosened without it being explained how CTs of these traditionally more "conceptual" content types are formed. Moreover, the opposition between empirical CTs and cultural CTs seems very hard to uphold on the proposed basis which makes the latter farther removed from perception than the former: a very wide range of cultural objects (from Coca Cola bottles to saints) are recognized by means of simple perceptual schemata, while on the other hand it is an extremely doubtful claim that abstract concepts should in general be culturally specific through and through. As to the alleged opposition between CTs and prototypes, the idea that CTs should have minimum intension fits badly with the earlier claim that they include multimedial representations for object recognition (including smells, sounds, etc.).

While the basic layout of the CT/NC/MC theory thus seems a very promising idea, its elaboration suffers from serious lacks, supposedly because of their ties to (too) simple concepts of empirical phenomena, psychology, and culture inhibits their extrapolation. It is almost as if Peirce's much-quoted (also by Eco) remark - that if Kant had taken the consequences

inherent in his draft of schematism, it would have overgrown his whole work - has a bearing on Eco's reflections as well.

The fourth essay recounts the platypus strife of the 19th century with the aim of reconciling the CT/NC/MC theory with Eco's earlier discussions of dictionary vs. encyclopaedia semantics, the former being characterized by hierarchical organization, linguistic determination, a limited inventory of semantic features, proceeding by definition (corresponding to structuralist analyses of meaning), the latter being characterized by an uncoordinated and indefinite mass of extralinguistic knowledge, proceeding by classification (corresponding to an empirical, everyday conception of meaning). In relation to the NC/MC distinction, a first glance might suggest that NC/MC correspond to Encyclopaedia/Dictionary, respectively (by the common feature unordered/ordered), but in the opposite direction points the fact that NCs are supposed to be simpler than MCs, and any precise correlation between the two concept pairs is given up. Eco after long deliberation places "wild" categorization in NC while systematic categorization belongs to the MCs. Dictionary semantics is characterized - in both MC and NC - by limiting itself to register that a concept is located on a certain node in a classificatory tree, while encyclopaedic knowledge includes both locations of concepts in classifications as well as their further content. The conclusion by the platypus example is that an interaction between dictionary and encyclopaedia knowledge is necessary in the ongoing negotiation leading to from wild to less wild classification; it takes its point of departure in one and the same CT/NC which is impossible to doubt as a whole (the existence of such a strange creature as the platypus is beyond doubt, even if certain single properties (its laying eggs, its giving milk, etc.) may long be doubted), while the interpretation of this core in terms of MC is highly variable and subject to possible systematical doubt (is the platypus bird, mammal, reptile, etc. ...) giving possibility for scientific progress.

A further possibility of development in this chapter is to elaborate on the distinction between CTs and NCs, prelinguistic categories and linguistic categories, respectively. Rita Nolan has in a strong paper proposed that the distinction between perceptual and conceptual categories may be drawn according to whether the category is contrasted to other categories<sup>xix</sup>. This would point to the idea that the role of CTs - perceptual categories - is to facilitate identification (as a type), while the role of the NCs developed out of them is to facilitate classification. Identification and classification have much too often been identified in semiotics, but an extrapolation of Eco's

proposal may lead to a theory where the latter is seen as a more complicated process presupposing the former<sup>xx</sup>.

The fifth essay on reference is one of the book's best and takes the negotiation-semantics-idea from the field of icon and content to the field of index and reference. Kripke's well-known rigid-designator theory of proper names and their ontological reference is criticized with an Italian comical sketch as an example. Eco's argument is convincing: a completely naked reference without any descriptive content is only possible as a limit case, and rigid designation must be reinterpreted in a Kantian fashion as a regulative idea governing the ongoing research process rather than being the normal reference relation in ordinary language where pragmatic reference by negotiation is the rule: "When people listen to acts of reference, they usually ask lots of questions".

The reintroduction of primary iconism is nothing less than a semiotic necessity, and the discussion of Kant's schematism is highly relevant for the development of a semiotics between truthfunctional reduction of meaning on the one hand and various irrationalist claims of the ineffability of meaning on the other. The CT/NC/MC theory is a valuable outline for a theory of content between abstract concepts on the one hand and the multiplicity of perception on the other, and the negotiation theory of reference continues the valuable insight in Kripke reference theory in a pragmatic setting<sup>xxi</sup>.

### *The Schematic Turn*

Still, the lack of systematic disposition and conclusions in the book is highly regrettable. It contributes to the list of unanswered questions and problems in the position it puts forward. Let me name a few.

First of all, the delimitation of iconicity and schemata to empirical concepts with a close connection to the psychology of perception is very hard to understand. Of course, the understanding of empirical concepts is a spectacular problem, but if we should avoid the pitfalls of empiricism and psychologism making their re-entry in semiotics alongside the reintroduction of iconicity, it is crucial to see the problem of empirical concepts in a close relation to abstract concepts - just like it is the case already in Kant where schemata are seen to account for empirical concepts as well as a priori concepts. This idea in Kant is continued in Peirce's theory of diagram - see next chapter - where we learn that empirical concepts are schematic only to the extent that they are built from pure diagrams invested with empirical constraints and references. This implies that Eco's account for schemata

overlooks the crucial connection between observation and generality in schemata, to which we shall return in the next chapter (to some extent Peirce's version of the synthetic a priori). In diagrams, it is possible directly to observe generality, Peirce claims; Husserl had an analogous insight in his theory of categorial intuition in the 6th of the *Logische Untersuchungen* where he claims that in order for categories to be understood there must exist a kind of perception allowing us to grasp them (see ch. 6). It is the observability of general, "abstract" properties which is the crux of schemata. Here, all reference to human psychology is bracketed, and the corresponding extension of the icon category makes it cover anything from photos to algebra, from perceptions to graphs, in so far as these signs allow for the crucial operations to be performed, leading to more information about their object. As Eco fails to see this, his reintroduction of iconicity threatens to become the reintroduction of a culturalized variant of (psycho-)logical positivism (without his intention, no doubt) in semiotics. This becomes evident, when he (253) summarizes the contributions to the determination of the platypus in the following two currents: one body of perceptual observation sentences based on the intrinsic characteristic of the environment, and, on the other hand, one holist (in a Quinean sense), structural system of propositions which performs a "cultural segmentation of the content" (corresponding to the strange subsumption of abstract meanings under cultural CTs). Protocol sentences, on the one hand, and on the other the means to organize them, be they logical or psychological of origin - the old couple so well-known from psychological or logical empiricism - with the one difference that the (psycho-)logical apparatus here is supposed to be culturally variable. It is well known that in all positivist ways of cutting the cake, what is deliberately left out is any reference to the synthetic a priori; no a priori is left but analytical tautologies. In Eco, this corresponds exactly to the underestimation of the general content of schemata, but it becomes very difficult to see which device should be able to mediate between the cultural concept systems on the one hand and the observation sentences on the other. Even if a huge step forward, Eco's newfound iconicity thus inherits some of the culturalist problems of his earlier position. The whole a priori set of concepts yielding the basic schemata of each of the single special sciences falls away - ironically in a period where analytically minded philosophers reintroduce the synthetic a priori (cf. the idea of "fallibilistic apriorism", ch.8). Of course, the reason why the cultural reference is included here is in order to answer an important question of fundamental semiotics: how are cultural differences possible - but the answer to this question must not beforehand exclude the answer to an equally important

question: how is scientific knowledge possible? This disappearance of an autonomous account for abstract concepts in Eco's theory is indirectly apparent in the rather generous amount of information supposed to be present in the observation-close CTs. Here, it is for instance a pre-linguistic presupposition that a dog is an animal (in no scientific sense, it is true, but still supposed as a pre-cultural knowledge impossible to delete). But is it really appropriate to describe so complicated information as inherent in perception - even if admitting Peircean generality inherent in perception? - in any case it presupposes a very developed concept of perception. We can easily subscribe to Eco's observation that the idea that dogs are animals is culture- and language-independent - but is this fact not more satisfactorily described when we say that an a priori concept of animal is involved here - one that we might even be able to schematize (as something like a self-propelled metabolism looking for nutrition, cf. ch. 9)?

The admittance of abstract relations as crucial to the construction of schemata would yield a whole series of further consequences: the variation of schemata, the experimentation of schemata, the fallibilistic reinterpretation of a priori schemata, the distinction between the icon and the psychological conditions for the processing of it. Let me conclude with arguing for this further list of steps to be taken in order to complete the schematic turn of semiotics. There is a crucial variation procedure connected to schemata linking type and tokens, and this goes for empirical and a priori schemata alike. The general picture of the schema must be varied in order to yield subtypes and tokens of the typical schema. But not all a schemata allows for the same formal kinds of variation nor the same scope of variation procedures. In dogs, e.g. the variation of the type must be rather extensive in order to cover races like Great Dane and Chihuahua, respectively, while the variation allowed in platypuses, presumably, is somewhat more restricted. In the concepts of animals, continuous variations (within a whole set of further *Bauplan* constraints) are relevant, while in the concept of chess games, discontinuous variations prevail. A huge issue is suggested by these remarks; suffice it to say that the types and scope of variation thus forms a part of the very concept of schema itself and the specification of the variation's type and scope forms an indispensable part of the content associated with each specific schema.

Eco touches upon this important idea in Gibson's concept of "affordance", the fact that schematic content in some respects indicates "what may be done" with the phenomenon in question. In addition to the variation linking type with token, this forms an even more extensive field of schematic research: which rule-bound manipulations may be undertaken on

a schema in order to map which corresponding changes may take place in the object it depicts? Peirce's schema concept, that of a diagram, makes explicit this dimension of experimenting or manipulating in every diagram - in the animal schema it will be the manipulation of it to simulate animal behavior; in more abstract schemata - like logical or algebraical expressions - it will be the possibility of proving theorems or solving equations. This property is what makes schemata fit for *Gedankenexperimente* of every kind, cf. next chapter.

If we apply this experimenter's stance to abstract schemata we may get a crucial corollary as to the notion of a priori. In Kant, the notion covers knowledge which is valid without regard to empirical facts and hence pre-given for the transcendental subject. What diagrams make clear is that these two properties are not in any way synonymous. What is valid regardless of empirical facts is not for this reason self-evident for us (which the history of mathematics should suffice to convince us). This implies that a priori knowledge is exactly as fallibilistic as empirical knowledge, and our access to it takes place via experimentation on schemata (see ch. 8). This idea even fits very well into Eco's idea of a negotiation semantics which may easily be enlarged so as to encompass the evolution of abstract knowledge.

Having asserted the central place of abstract relations in schematism, we may propose a distinction between iconism as such (cf. Eco's "disposition to correspond") which needs no human or other psychology to be realised, on the one hand, and the psychological means at human disposal for recognizing iconicity, on the other. The former, iconicity as such, may be studied without reference to the latter. In doing so, semiotics will remain faithful to its anti-psychological and phenomenological foundations. Equipped with these means, semiotics should be able to take further the *schematic turn*, which Eco so fruitfully proposes, and to build a semiotics which is iconic and thereby enlightened rationalist in the best sense of the word.

This repudiation of more and less consequent anti-iconists takes us back to the Peircean definition of the icon. Nowadays, everybody seems to know and love the Peircean tripartition of signs into Icons, Indices, and Symbols, referring to their objects by means of similarity, contiguity, and habit, respectively. Yet, there is more to the Peircean notion of Iconicity than meets the eye in this deceptively simple definition. Let us run through some of the central descriptions of Iconicity in Peirce. It must here, as mentioned above, be borne in mind that Peirce, being a realist, rarely proceeds by *defining* his notions. Icons are to Peirce real existent phenomena, and they may be *described* in a series of different ways; no simple definition will

exhaust them. In fact, as it will be clear, this feature of his realism is closely connected to the very notion of iconicity itself.

Let us present a range of his different descriptions of icons and discuss the crucial implications involved therein.

### *Similarity and quality*

First of all, as is well-known, iconicity is dependent upon similarity: icons are “signs whose significant virtue is due simply to its Quality” (“Minute Logic”, 1902, 2.92).<sup>xxii</sup> This quality amounts to shared characters between sign and object:

An Icon is a sign which refers to the object that it denotes merely by virtue of characters of its own, and which it possesses, just the same, whether any such Objects actually exists or not. It is true that unless there really is such an object, the Icon does not act as a sign; but this has nothing to do with its character as a sign. Anything whatever, be it quality, existent individual, or law, is an Icon of anything, in so far as it is like that thing and used as a sign of it.

(“Syllabus”, 1903, EPII, 291; 2.247)

Here, similarity is simply equal to shared qualities. As already mentioned, a complete Icon would stand in a relation of identity to its object except for its existence which in Peirce’s Kantian tradition is of course no predicate, no quality. Hence, Peirce does not subscribe to Leibniz’ principle of the Identity of Indiscernabilities: two objects may be perfectly alike except for their existence in time and space which is not counted as a quality but as a haecceity. An icon which shares only some qualities with its object has so to speak a general side in so far as it is blank with respect to the aspects not partaking in the Icon; these are bracketed by prescission in the Icon. Even if the very Icon in itself is not, as mentioned, general, one could say that any Hypoicon (Peirce’s notion for any sign which primarily functions by means of iconicity) thus involves a germ of generality. This becomes the possibility of various more or less strict stylizations of Icons, rendering certain qualities important, others not so, often exaggerating the qualities taken to be important, whereby the Icon acquires a certain degree of typicality, being able to subsume tokens under it. Thus, an Icon may be a type, a Legisign, without any intervention of Symbols; in fact, this forms the very basis of Peirce’s realism.

## *Predicates*

Because Icons are the means of representing qualities, they generally constitute the predicative side of more complicated signs:

The only way of directly communicating an idea is by means of an icon; and every indirect method of communicating an idea must depend for its establishment upon the use of an icon. Hence, every assertion must contain an icon or set of icons, or else must contain signs whose meaning is only explicable by icons. The idea which the set of icons (or the equivalent of a set of icons) contained in an assertion signifies may be termed the predicate of the assertion. ("That Categorical and Hypothetical Propositions are one in essence, with some connected matters," c. 1895, 2.278)

Thus, the predicate in logic as well as ordinary language is essentially iconic. It is important to remember here Peirce's generalization of the predicate from the traditional subject-copula-predicate structure. Predicates exist with more than one subject slot; this is the basis for Peirce's logic of relatives and permits at the same time enlarging the scope of logic considerably and approaching it to ordinary language where several-slot-predicates prevail, for instance in all verbs with a valency larger than one. In his definition of these predicates by means of valency, that is, number of empty slots in which subjects or more generally indices may be inserted, Peirce is actually the founder of valency grammar in the tradition of Tesnière. So, for instance, the structure “\_ gives \_ to \_” where the underlinings refer to slots, is a trivalent predicate. Thus, the word classes associated with predicates are not only adjectives, but verbs and common nouns; in short all descriptive features in language are predicative.

This entails the fact that the similarity charted in icons covers more complicated cases than does the ordinary use of the word. Thus,

... where ordinary logic considers only a single, special kind of relation, that of similarity, - a relation, too, of a particularly featureless and insignificant kind, the logic of relatives imagines a relation in general to be placed. Consequently, in place of the *class*, which is composed of a number of individual objects or facts brought together by means of their relation of similarity, the logic of relatives considers the *system*, which is composed of objects brought together by any

kind of relations whatsoever. (“Detached Ideas Continued”, 1898, NEM IV, 339)

This allows for abstract similarity because one phenomenon may be similar to another in so far as both of them partake in the same relation, or more generally, in the same system - relations and systems being complicated predicates. In this respect, a father is similar not only to other fathers, but to sons; the father-son relation is similar to the mother-daughter relation, etc.

But not only more abstract features may thus act as the qualities invoked in an icon; these qualities may be of widely varying generality (just like Eco noticed in the passing):

But instead of a single icon, or sign by resemblance of a familiar image or “dream”, evocable at will, there may be a complexus of such icons, forming a composite image of which the whole is not familiar. But though the whole is not familiar, yet not only are the parts familiar images, but there will also be a familiar image in its mode of composition. (...) The sort of idea which an icon embodies, if it be such that it can convey any positive information, being applicable to some things but not to others, is called a *first intention*. The idea embodied by an icon, which cannot of itself convey any information, being applicable to everything or nothing, but which may, nevertheless, be useful in modifying other icons, is called a *second intention*.

(“The Regenerated Logic”, 1896, 3.433).

What Peirce distinguishes in these scholastic standard notions borrowed from Aquinas via Scotus, is, in fact, the difference between Husserlian formal and material ontology. Formal qualities like genus, species, dependencies, quantities, spatial and temporal extension and so on are of course attributable to any phenomenon and do not as such, in themselves, convey any information in so far as they are always instantiated in and thus, like other Second Intentions, in the Husserlian manner dependent upon First Intentions, but they are nevertheless indispensable in the composition of first intentional descriptions. The fact that a certain phenomenon is composed of parts, has a form, belongs to a species, has an extension, has been mentioned in a sentence etc. does not convey the slightest information of it until it by means of first intentional icons is specified which parts in which composition, which species, which form, etc. Thus, here Peirce makes a hierarchy of icons which we could call material and formal, respectively, in

which the latter are dependent on the former. One may note in passing that the distinctions in Peirce's semiotics are themselves built upon such Second Intentions; thus it is no wonder that every sign must possess some Iconic element. Furthermore, the very anatomy of the proposition becomes just like in Husserlian rational grammar (of the 4th *Untersuchung*) a question of formal, synthetic a priori regularities.

### *Icons in abduction and in reasoning in general*

Among Peirce's forms of inference, similarity plays a certain role within abduction, his notion for a "qualified guess" in which a particular fact gives rise to the formation of a hypothesis which would have the fact in question as a consequence. Many such different hypotheses are of course possible for a given fact, and this inference is not necessary, but merely possible, suggestive. Precisely for this reason, similarity plays a seminal role here: an

... ordinary Argument, or Abduction, is an argument which presents facts in its Premiss which *presents a similarity* to the fact stated in the conclusion but which could perfectly be true without the latter being so. ("Minute Logic", 1902, 2.96, our italics).

The hypothesis proposed is abducted by some sort of iconic relation to the fact to be explained. Thus, similarity is the very source of new ideas - which must subsequently be controlled deductively and inductively, to be sure (cf. ch. 16). But iconicity does not only play this role in the contents of abductive inference, it plays an even more important role in the very form of logical inference in general:

Given a conventional or other general sign of an object, to deduce any other truth than that which it explicitly signifies, it is necessary, in all cases, to replace that sign by an icon. This capacity of revealing unexpected truth is precisely that wherein the utility of algebraic formulae consists, so that the iconic character is the prevailing one. ("That Categorical and Hypothetical Propositions are one in essence, with some connected matters," c. 1895, 2.279)

The very *form* of inferences depends on it being an icon; thus for Peirce the syllogistic schema inherent in reasoning has an iconic character: "Whenever one thing suggests another, both are together in the mind for an instant. [...] every proposition *like* the premiss, that is having an icon like it, *would*

involve [...] a proposition related to it as the conclusion [...]” (“Short Logic,” c. 1893, EPII, 24; 2.444) Thus, first and foremost deduction is an icon: “I suppose it would be the general opinion of logicians, as it certainly was long mine, that the Syllogism is a Symbol, because of its Generality.” (PAP, c. 1906, NEM IV, 317) - but instead it is an icon, because the icon is the only type of signs that *shows* (318).

The truth, however, appears to be that all deductive reasoning, even simple syllogism, involves an element of observation; namely deduction consists in constructing an icon or diagram the relation of whose parts shall present a complete analogy with those of the parts of the objects of reasoning, of experimenting upon this image in the imagination, and of observing the result so as to discover unnoticed and hidden relations among the parts. (“On the Algebra of Logic”, 1885, W5, 164; 3.363)

In this light, it is no wonder that synthetic a priori truths exist - even if Peirce prefers notions like 'observable, universal truths' - the result of a deduction may contain more than what is immediately present in the premises, due to the iconic quality of the inference.

### *To Learn More*

This leads us to what is probably the most decisive feature in icons at all: the fact that they are the only signs through the contemplation of which it is possible to learn more: “For a great distinguishing property of the icon is that by the direct observation of it other truths concerning its object can be discovered than those which suffice to determine its construction.” (“That Categorical and Hypothetical Propositions are one in essence, with some connected matters”, c. 1895, 2.279) But this epistemologically crucial property is nothing but an elaboration on the concept of similarity. It is not only the only type of sign involving a direct presentation of the qualities of its object, it is also a sign through the contemplation of which one can learn more than lies in the directions for its construction. If one imagines the limit case of a pure, icon-less index, then it would have a quality-deprived character of being-now, of mere insistence, about which we would never be able to learn anything except if it became possible to form some kind of icon of it. And if one imagines a purely symbolic sign, say for instance the variable  $x$ , we cannot learn anything about it except when it is placed in some iconical, that is, predicative, context or other. This implies that

iconicity also covers what we for formalistic reasons have been used to seeing as “purely symbolic formalisms”, algebras, and symbolic calculi of various sorts. They are not deprived of iconicity; the very fact that we can learn more about their object from them is proof of their iconicity. Thus, the “learn more” clause prevents Peirce’s definition of similarity from being circular like most usual definitions are; similarity always involves the possibility of learning more than what is at present obvious. In this respect, icons play the central role in Peirce’s evolutionary epistemology and his idea of science as a transpersonal endeavor of the infinite community of researchers: it is a steady growth in complicated predicates, in iconicity which characterizes science and guarantees its asymptotic movement towards ultimate truth, provided the pragmatistic maxims are followed. The diagrammatical implications of this operational icon definition are traced in ch.4.

### *Icons, algebra, and syntax*

As just mentioned, this vision of iconicity implies that it includes all kinds of algebraical systems (at least to the extent it is possible to manipulate them in order to gain further information): “As for algebra, the very idea of the art is that it presents formulae which can be manipulated, and that by observing the effects of such manipulations we find properties not to be otherwise discerned.” (“On the Algebra of Logic”, 1885, W5, 165; 3.363). Many years before his development of existential graphs, while he was still working on algebraical logic representations, Peirce thus realizes that algebra is even “*icons par excellence* [...] no application should be made of such an abstract statement without translating it into a sensible image.” (ibid.). The sensible image in question here refers to the fact that we are able to synthesize an abstract statement into an expression, for instance an equation which we can thereafter manipulate according to certain rules which are adequate to *die Sachen selbst* in question. The manipulation of an equation or of an algebraic statement is, in this respect, perfectly equal to the manipulation of a picture or a text or any other icon in order to make it reveal some more similarities than immediately observable. This might sound like an offensive idea - that symbolic calculi should now count as prototypes for iconicity - but the arguments for it are very strong, and what is more, it even gives us a critical tool for distinguishing between fertile - that is, iconic - and less fertile formalization. A formalization in this optics is namely sterile to the extent that it does not permit any interesting possibilities of manipulation. Mere formalization without motivated syntactical, generative possibilities is

in this view a blind alley. Of course, it may not always be told beforehand whether a certain formalization is fertile, and the relevant experimentation might be very mediate: to write down a fifth grade equation might seem hopeless in so far as we now know it has no canonical solution, but the very fact that it is formulated in the same language as solvable polynomials of lesser grade ultimately permitted the proof that it in fact has no solution - which is an even more impressive manipulation of it. But the mere substitution for some objects or object categories by letters or the like makes no manipulable icon, and this is why so many algebraic attempts in the humanities have proved sterile: they have merely exchanged some concepts with letters and have not furnished a motivated (that is, iconic), formal set of rules for their manipulation (cf. ch. 4). An *iconic syntax* is invariably needed, and this is found already in *language*: "That icons of the algebraic kind, though usually very simple ones, exist in all ordinary grammatical propositions is one of the philosophical truths Boolean logic brings to light." ("That Categorical and Hypothetical Propositions are one in essence, with some connected matters," c. 1895, 2.280). We have already found icons in predicates, but the very syntax of language is in itself an algebra of partially iconic kind, because it is built in accordance with the crucial 2nd intention distinctions in the object described: the distinctions between various kinds of predicates, various kinds of subjects, various kinds of copulas. In this respect, Peirce's idea of an iconic grammar may meet Husserl's *reine Grammatik* of the 4th *Untersuchung*; both are formal, general calculi in partial accordance with aspects of the mereological structure of the object described. Thus, "Every assertion is an assertion that two different signs have the same object." ("Short Logic", 1895, EPII, 20; 2.437) - namely an iconic sign pertaining to a certain quality and an indexical sign pointing out the object in question in some frame of reference. These two in themselves, taken separately, assert nothing; it is only their being integrated in iconic syntax which makes an assertion: "Icons and indices *assert nothing*. If an icon could be interpreted as a sentence, that sentence must be in a "potential mood", that is, it would merely say "Suppose a figure has three sides .." etc. " (ibid., EPII, 16; 2.291). Here Peirce in fact discovers a logical category found around the same time by the Austrian logician Meinong who coined it *Annahme* - assumption - an assertion deprived of its assertive character and hence consisting of nothing but icons and indices (or, of symbols of them, to be precise) in Peirce's terminology, a kind of weaker copula<sup>xxiii</sup>. In fact, his deliberation makes it possible to distinguish two kinds of *Annahmen*, assumptions, the merely iconic and the both iconic and indexical. "Suppose

three sides ..” would be an example of the first, while “Suppose Socrates has three sides ...” would be the other. A purely indexical assumption is probably impossible except as a limit case - or is at least empty: “Suppose something is the case right now ...” In the Brentanian tradition, to which Meinong also belongs, Husserl’s *Bildbewusstsein* would be an example of the as-if-character of assumption. This idea of an iconic grammar permits Peirce to develop yet another iconic parallel to this Austrian tradition, namely Stumpf’s famous coinage of *Sachverhalt* as a notion for the signification (in other Austrians: the reference) of a proposition. In Peirce, we find a direct expression of this idea when he states that “What we call a “fact” is something having the structure of a proposition, but supposed to be an element of the very universe itself.” (“New Elements” 1904, NEM IV, 239). Of course, this definition explicitly deals with what is supposed to be the case, that is, supposed reference and not signification, but it is entirely consistent with Peirce’s intensional semantics to operate with “possible facts”, phenomena supposed to be able to be the case, which would then be entirely coextensive with *Sachverhalte*. Thus, in general it is the possible iconicity between the structure of grammar and the structure of facts that permits sentences to be understood:

The arrangement of words in sentences, for instance, must serve as *Icons*, in order that the sentence may be understood. The chief need for the icon is in order to show the Forms of the synthesis of the elements of thought. For in precision of speech, Icons can represent nothing but Forms and Feelings. (“Prolegomena to an Apology for Pragmaticism”, 1906, 4.544)

As a consequence, Peirce may of course reproach logicians which claim they do not use icons but merely symbols; they must invariably involve iconicity as the basis of their syntax of manipulation. The character of whole propositions in contrast to mere icons is that a proposition, or, in Peirce’s coinage, a “Dicisign [...] conveys information, in contradistinction to a sign [such as an icon] from which information may be derived” (“Syllabus”, ca. 1902, 2.309). We have already seen that a mere icon does not assert anything; still it is possible to derive information from it by experimentation, which so to speak makes it speak, in using it as material for a proposition. As opposed to this, a proposition already asserts something by attributing icon qualities to an object or event singled out by an index. Looking back on what is usually conceived as pure icons, they now differ on a scale between mere icons and dicisigns. A proposition, Peirce says elsewhere, is a sign

making explicit the object to which it refers. A mere icon does nothing of the kind: a painting of a man is an icon of many possible men, but as soon as an index of some object is added, for instance "Portrait of Mr. P.", the painting now becomes a proposition saying something like "Mr. P. looks like this". Of course the index needs not be in the title, but may reside in some other information conveyed by the painting itself.

All in all, the idea that algebraic, formal, and linguistic syntactic systems must be involve iconicity in order to be able to convey information is a very remarkable consequence of Peirce's concept of iconicity.

### *Mathematics and diagrams*

As an implication of this fact, icons now get a very special relationship to mathematics:

- - - The reasoning of mathematicians will be found to turn chiefly upon the use of likeness, which are the very hinges of the gates of their science. The utility of likenesses to mathematicians consists in their suggesting in a very precise way, new aspects of supposed states of things. ("The Art of Reasoning," 1894, EPII, 6; 2.281)

Mathematics is merely hypothetical, all its statements are of the form if-then; given such-and-such axioms, such-and-such symbols, such-and-such rules of transformations, this and that will be a consequence. This makes it a science of icons, in so far as all this inference deals with iconic structures. Icons cannot deceive and make you believe in something illogical (albeit of course in something unreal), because they always portray something logically possible (you can not make an icon of the round square etc., but easily of the bald king of France). Hence, "It will be observed that the icon is very perfect in respect to signification, bringing its interpreter face to face with the very character signified. For this reason, it is the mathematical sign *par excellence*. But in denotation it is wanting. It gives no assurance that any such object as it represents really exists." ("New Elements", NEM IV 242-3). Mathematics is so to speak a mapping of the field of formal iconic possibilities, and as Peirce conceives of the field of qualities to be - at least potentially - one vast continuum, mathematics in fact ought to be able to detect the hypothetical relations of all qualities, including even, in principle, sense qualities. Mathematics does not assert anything about the world; it is more like a vast repertoire of possible complicated quality interrelations to be used in descriptions; for this reason every science depends on

mathematics as a large stock of hypothetical relation structures - even if it does not derive its *actual* truths from there. It contains only perfect truths which Peirce in a play of words coins as imperfect – that is, not actual: “A proposition is not a statement of perfectly pure mathematics until it is devoid of all definite meaning, and comes to this -- that a property of a certain icon is pointed out and is declared to belong to anything like it, of which instances are given. The perfect truth cannot be stated, except in a sense that it confesses its imperfection. The pure mathematician deals exclusively with hypothesis.” (“Truth and Falsity and Error,” Baldwin’s Dictionary, 1901, 5.567) The special kind of instrument used for deriving mathematical and other hypothetical truths is to Peirce the subset of icons named “diagrams”. I shall not go into the special problems of them here, to which I shall return later, but let me run through the central features: “Remember it is by icons only that we really reason, and abstract statements are valueless in reasoning except so far they aid us to construct diagrams.” (“The Logic of Quantity”, 1893, 4.126) Diagrams are Peirce’s heirs to Kant’s schemata; they make possible the inferring of synthetic a priori propositions, or, in Peirce’s terms, they make it possible to infer iconically about general matters. A diagram is an icon governed by a symbol such that it stands generally as a type for a whole set of token instantiations like it - just like the premisses of a general syllogistic inference. This guarantees that the manipulation of the diagram holds for all these token cases involved. Certain rules for manipulation are implied by the structure of the icon itself, others are imposed by the symbol regulating it, and the outcome of this is that it is not possible to predict beforehand what the results of the transformations of it will be. This in turn becomes Peirce’s explanation of the surprising fact that mathematics (as well as the special sciences using mathematics) is still able to discover new regularities: all truths are not given in and by the definition of a branch of mathematics, new truths may yet be discovered by formal experimentation observations. Thus, this opens all of a sudden the way to a “Geschichte der reinen Vernunft”: it is in fact possible to obtain a unforeseeable growth in synthetic a priori knowledge - and at the same time it introduces in a certain sense experiment and observation on the a priori level: the mapping of this field is due to the experiments of imagination in the “reiner Anschauung”, Kantianly spoken, or in the Husserlian *Bildbewusstsein* including the *kategoriale Anschauung*.

It is rarely surprising in a continuistic theory like Peirce’s to find traces of diagrammatic features in most icons. Still it must be possible - in a further synthetic a priori research - to construct a typology of possible

diagrams. Peirce himself gives us the idea of such an endeavor when, in a description of diagrammatic reasoning, he notes in the passing that

Modern exact logic shows that every operation of deductive reasoning consists of four steps as follows:

1st, a diagram, or visual image, whether composed of lines, like a geometrical figure, or an array of signs, like an algebraical formula, or of a mixed picture, like a graph, is constructed, so as to embody in iconic form, the state of things asserted in the premise (there will be but one premise, after all that is known and is pertinent is collected into one copulative proposition). (“On Quantity”, c. 1895, NEM IV, 275)

The following three steps consists in scrutinizing the diagram and trying an experiment; in observing the results of this and try to find a new relation between the parts of it “not mentioned in the precept by which it was constructed ...” (276); finally in repeating the experiment and inferring inductively that every diagram constructed the same way would yield the same result. But the crucial point in this context is the three subtypes of diagrams mentioned; Michael May and I have preliminarily proposed to call them *maps*, *algebra*, and *graphs*, respectively. I shall return to this idea later.

### *The imaginary moment*

Now, at a certain moment in the diagrammatical procedure just mentioned, a certain phase is reached, in which the icon performs its full impact, a moment of imagination, one might call it. It lies already in the very description of its character of pure quality: “The role of an icon consists in its exhibiting the features of a state of things as if it were purely imaginary.” (“Logical Tracts, No. 2,” c. 1903, 4.448); here we find *in nuce* how Peirce’s icon entails the idea of purely fictitious *Sachverhalte*. In an early quote, Peirce describes it in more detail as follows:

Icons are so completely substitutions for their objects as hardly to be distinguished from them. Such are the diagrams of geometry. A diagram, indeed, so far as it has a general signification, is not a mere icon; but in the middle part of our reasonings we forget that abstractness in great measure and the diagram is for us the very thing. So in contemplating a painting, there is a moment when we lose the consciousness that it is not the thing, the distinction between the real

and the copy disappears, and it is for the moment a pure dream -- not any particular existence, and yet not general. At that moment we are contemplating an *icon*.

(“On the Algebra of Logic”, 1885; W5, 163; 3.362)

This moment of fiction is crucial to the possibility of thought, of imagination, or of contemplation of pictures to approach the object intended. In many cases, of course, this imaginary moment may be unrestricted as the notorious “free play of imagination”; in others it is constrained by various, more or less severe, regulations pertaining to the object, for practical, æsthetical, scientific, or other purposes. In all cases, however, this moment of identification where the manipulation of the icon in a certain sense is a manipulation of the object itself, is crucial to the possibilities of solving the constraints and success of the experiment. One could counterargue here: it is precisely to avoid the wildways of intuition in this imaginative moment that we bind science to formal calculi - cf. Hilbert’s formalist idea of bracketing intuition entirely while manipulating formal symbols. But here the Peircean will answer: formal calculation *also* requires this imaginative moment; it may not disclose for me a very large and sensuous picture of its object, but it still, thanks to the syntax employed, can never be completely deprived of an - even if very highly stylized - iconic link to its object. And, what is more, it permits us to interpret Husserl’s version of the *adequatio rei ac intellectus*: the iconic ecstasy only lasts for a moment, and after the experiment it becomes possible to check if the iconic result is in fact pertinent for (some partial behaviour of) the object it was supposed to depict. If not, another diagram may be invoked, a modification of the diagram present, maybe to construct a new subset for the object not entirely grasped ... etc. The movement through this imaginary moment alternates continuously between on the one hand the icon-and-object-is-one supposition and on the other the split consideration of diagram and the more or less spontaneously conceived object, the *Widerstreit* of Husserlian *Bildbewusstsein* (see ch. 14). The imaginary moment is described in psychologically-sounding terms in Peirce, but given his pragmatic idea of iconicity, psychology or the presence of consciousness form no necessary aspect of the imaginary moment. When iconicity is described in terms of manipulation and experiment possibilities, the condition of possibility for the imaginary moment lies in the fact that actions are undertaken on the icon which due to the structural similarity might as well be performed on the object. But the structural homology of actions does not necessarily require psychology. The aesthetic possibilities in the hypothetical character of this

imaginary moment are also suggested in Peirce. For even if all of mathematics is hypothetical, not all hypothesis is (explicitly, anyway) mathematical:

It cannot be said that all framing of hypothesis is mathematics. For that would not distinguish between the mathematician and the poet. But the mathematician is only interested in hypotheses for the forms of inference from them. As for the poet, although much of the interest of a romance lies in tracing out consequences, yet these consequences themselves are more interesting in point of view of the resulting situations than in the way they are deducible. Thus, the poetical interest of a mental creation is the creation itself, although as a part of this a mathematical interest may enter to a slight extent. Detective stories and the like have an unmistakeable mathematical element. (“On Quantity”, c. 1895, NEM IV, p. 268)

Given this difference between mathematics and poetry, one could add that they share a similarity to the extent that both, in fact, are interested in the result of hypothetical reasoning, not the very steps leading there; this interest is rather the matter for the logician and the literary critic (all or some of whom may of course be incarnated in the same empirical person). As is evident, this rendering of the imaginary moment in icon contemplation has its counterpoint in the *Bildbewusstsein* of Husserl, whose eidetic variation to a large extent plays a role analogous to diagrammatic experimentation here, and it is no meagre consequence of Peirce’s concept of iconicity that it permits mathematics, logic, and art to be understood as different practices all related to this imaginary moment of thought. Furthermore, as a rendering of *Bildbewusstsein* or the more diffuse “imagination” or *Einbildung*, this is not conceived of as a separate and thereby ununderstandable faculty of mind (“fantasy”), but is seen as a specific phase in a well-described diagrammatic and more generally iconic process of interpretation.

In the last chapter, we shall return to a genre related to the detective story, namely that of spy novels.

### *The issue of Evidence*

Still, a uncomfortable peculiarity remains. Is it not strange that icons so to speak “hide” certain similarities whilst on the other hand they are supposed to be the very source of evidence? As we saw, the most crucial property in them is their ability to enclose hidden insights, making it possible for

experiment to “discover unnoticed and hidden relations among the parts” (“On the Algebra of Logic”, 1885, W5, 164; 3.363). It is possible to give a recipe for constructing an icon without revealing all of its possible similarities. A most striking example of this is the simple process of digitalizing a picture. Seeing the line of 1’s and 0’s of a computerized image does not display the similarities inherent in the picture, even if the information in question in some sense is available with the right system of transformations, the right means of interpretation. Of course, in these wordings, a perceiver of some kind is implied, a subject (albeit not necessarily a human being) for whom certain similarities may be hidden. And even if we may not construct the icon digitally, there will in many cases be more information in it than it is possible to exhaust. In some sense, the information already lies in the digital sequence, but only if it can be processed, not only by some instance processing the icon onto a screen, but also by some instance able to, by some kind of *Bildbewusstsein*, to see the icon as an icon of some object. In the most simple of icons, these hidden similarities are almost non-existent. If I contemplate a patch of a certain nuance of the color red, I contemplate an icon, but the only experiment I may venture here is varying the color to see when it changes or varying the form and size of the patch to see when it disappears. Not very promising, but as soon as we reach an icon with the (still not very high) complexity of a circle, it is ripe with hidden properties (just think of the issue of the exact relation between its diameter and periphery). In mathematics, an object as simple and apparently intuitive as the natural numbers are (after Gödel’s incompleteness theorem) ripe with theorems (Goldbach's conjecture, solutions to Diophantine equations etc. etc.) which are hidden from immediate appreciation, and which may even in many cases be formally undecidable. In a painting are concealed many enigmas which the painter himself has never contemplated (and since the sheet of the painting is continuous, the number of possible similarities is infinite which means that he would never even be able to contemplate them all in finite time - so much for the biographical method) - what is, for instance, the precise distance between the main characters, which geometric figure do the persons describe if we draw lines between them, what is the sum of the height of all the trees depicted. These examples go to show that almost all of such “hidden informations” are of course completely useless; the trick of the analyst is to make his experiment find somehow significant information among them. Take for instance a tour-de-force analysis by Erik Fischer of an altar piece by Eckersberg, where he drew the perspective lines of Judas’ empty chair at the last supper, only to find that this chair was skew - probably as a symbol

for the peculiarity of the missing person (see ch. 13). Principally conceived, the reason for these “hidden similarities” in the icon has several sources. One is that the icon does not have to be very complex, in order to be unable to be “perceived in a glance”. This goes not only for very large paintings from which it is impossible to get at a sufficient distance to be able to synthesize them in one gaze (a feature deliberately used by the abstract expressionists as a means of calling forth awe in the viewer), but also sufficiently complicated predicate structures in a text, in a mathematical problem, in a building, etc. But even if a very competent observer (or hard work on the part of a less competent one) makes it possible to “see it all in a glance”, there's still all the possible relations between the parts to be worked out, relations between relations between the parts, etc. We need hardly stress that the amount of relations between elements grows exponentially with the number of elements, and that the higher order relations grow exponentially with order - amounts which in turn must be multiplied with the set of possible interpretation systems for these relations. Almost all of such higher order relations are meaningless, but in aesthetic cases a few of them often miraculously “fit” together in order to produce a striking, provocative, pleasing, beautiful or otherwise noteworthy effect. Of course, this is why analysis is necessary, an analysis which in all these cases consequently cannot be anything but diagrammatical - including all the features mentioned above. Such kinds of “hiddenness” are of course due to the “finitude of man”, so central to the critical tradition in epistemology. Yet, one might loosen this fact from mankind's special *Dasein* and its destiny by stating that *any* physically instantiated analytical apparatus whatsoever will have to be finite and hence possess some limit or other for the size and complexity of the iconic structures it may process. Human language generally cuts any *Sachverhalt* into phrase pieces involving no more than three or four actants (three being for Peirce the highest irreducible relation so it is an advantage for us we are not biologically limited to two<sup>xxiv</sup>), but there seems to be no principal reason for not admitting computers able to work with iconic syntaxes with far higher valencies. Another more objective reason for iconic “hiddenness” is that the icon in question may appear in various versions, not similarly difficult to interpret. The obvious example is the sculpture *Etant donnés* by Duchamp to be watched through a hole in a door, an artwork which may appear simple until you discover the hole - but it is well known that the solvability of a problem in general depends highly on how it is posed. Of course, this is also dependent upon the means available for the interpreter, but not only so. Here, one might propose a generalized use of

Husserl's idea of *Abschattung*; the icon may so to speak display itself from several sides, and even if the same amount of information principally may be available from all versions, it might take much more computation to derive it from one icon than from another, analogous to Charles Bennett's concept of logical depth. An addition on page 3 saying "It was the butler" of course requires less computation than reading all of the following 399 pages, collecting evidence all along. Another issue is the very structure of the icon, no matter how it is presented – cf. the supposed distinction between P and NP problems in computer science, requiring different computation time to be processed. Conceived of at a great distance, in some way it remains an enigma why it is that icons exist with this intriguing property of hiding similarities, luckily a prerequisite to art as well as science; if gods exist, then they probably see everything directly - not *per speculum in aenigmate* - and hence know neither icons nor indices nor symbols. In Peirce as in Kant, the plurality of faculties of the human mind is due to the fact that we do not, maybe unlike the gods, possess immediate "intellectual intuition".

The special force of the icon, however, is its connection to *possibility*:

Each Icon partakes of some more or less overt character of its Object. They, one and all, partake of the most overt character of all lies and deceptions -- their Overtness. Yet they have more to do with the living truth than have either Symbols or Indices. The Icon does not stand unequivocally for this or that existing thing, as the Index does. Its Object may be a pure fiction, as to its existence. But there is one assurance that the Icon does afford in the highest degree. Namely, that which is displayed before the mind's gaze -- must be *logically possible*. ("Prolegomena to an Apology of Pragmaticism", 1906, 4.531)

The icon has the undeniable quality of showing something possible - it cannot, unlike symbolic speculation, yield neither Husserlian *Unsinn* nor *Widersinn*, the first being only possible through the breakup of iconic syntax, the other only by constructing a contradictory predicate. We may talk and wonder about the xlypf, the the which are has, the round square, the rational square root of 2, or the married bachelor, etc., but no simple icon can display any of them. But when this principle applies to the icons at stake in logical reasoning, it has very strong consequences:

Now necessary reasoning makes its conclusion *evident*. What is this "Evidence"? It consists in the fact that the truth of the conclusion is

*perceived*, in all its generality, and in the generality the how and why of the truth is perceived. What sort of a Sign can communicate this Evidence? No index, surely, can it be; since it is by brute force that the Index thrusts its Object into the Field of Interpretation, the consciousness, as if disdainingly gentle “evidence.” No Symbol can do more than apply a “rule of thumb” resting as it does entirely on Habit (including under this term natural disposition); and a Habit is no evidence. I suppose it would be the general opinion of logicians, as it certainly was long mine, that the Syllogism is a Symbol, because of its Generality. But there is an inaccurate analysis and confusion of thought at the bottom of that view; for so understood it would fail to furnish Evidence. It is true that ordinary Icons, - the only class of Signs that remains for necessary inference, - merely suggest the possibility of that which they represent, being percepts *minus* the insistency and percussivity of percepts. In themselves, they are mere Semes, predicating of nothing, not even so much as interrogatively. It is, therefore, a very extraordinary feature of Diagrams that they *show* [...] that a consequence does follow ... (“PAP”, 1906. NEM IV, 318).

Evidence thus comprises the sensuous making overt a quality in the object as well as the evidence *that* some proposition follows from certain premisses; in both cases icons are responsible. But this raises again the crucial question of how the same figure may be responsible for evidence and for hidden similarities. There are two reasons for this. The first lies in the process of iconic reasoning: evidence is what takes place *when* the experimentation reveals new aspects of the icon. Of course, the other parts of the predicate must - as icons - be evident themselves, but this evidence is backgrounded while the newly revealed quality is foregrounded and adds itself to the evidence already present. But this implies an important corollary to the phenomenological category of evidence: the fact that something is evident does not imply that it may not conceal further hidden aspects.<sup>xxv</sup> A problem may be perfectly clear to me without me knowing how to detect the solution. Or, the motif of a painting may be clear without the single strokes of paint being evident. To use a Husserlian metaphor which is not perfectly apt: the sight of one side of the object does not tell us how the back side looks. The metaphor is deceptive, for in the problem case, the front side does in fact in some scrambled way contain the information necessary to reconstruct the back side. The other reason is that any icon fails to portray its object with final precision; this possibility is only asymptotically open for the community of researchers. This, of course, is Peirce's answer by means of

continuity to Kant's *Ding-an-sich*, it may be reached, but only in an indefinite future. But this implies that given any present icon, it is always in principle possible to find an even better icon which will then yield more evidence than the former. Thus, as a consequence of both these reasons, iconic evidence is always relative.

But still, is it not a dubious idea to make icons the source of evidence? Husserl would say that evidence is constituted by the act in which the object is given in “anschauliche Fülle” - be it sensuous objects or logical truths, and that consequently evidence cannot be the product of any “Zeichenbewusstsein” (*Ideen*); this would lead to an infinite regress, for in which *Bewusstsein* should the *Zeichen* now be constituted? - and so on. Ergo, he argues, evidence must lie outside of the *Bild*- and *Zeichenbewusstsein*. Is it not the case that the icon as evidence locks us up in a Piranesian prison of icons of icons of icons ... from which we are never able to escape in order to ascertain true evidence? It seems to me that Peirce's theory of evidence provides an answer to this objection: evidence in the Husserlian *anschauliche-Fülle*-version actually has two sources: one is the Peircean index-consciousness of something being given with the force of haecceity, the evidence that something *exists*. The other is evidence that something *is as it is*, and this part is always dependent on icons with the relativity just mentioned: iconic evidence is dependent upon the continuous shift between icon-consciousness (to construct a Peirco-Husserlian bastard) and meltdown between the two sides of the iconic sign during the moment of imagination<sup>xxvi</sup>. It is this very process which makes it possible to reflect upon the object and ascribe it still more qualities; it is this process that makes possible that the object is given (seen from one side<sup>xxvii</sup>, it is true) in evidence one and for all. This is a strong fallibilist consequence of Peirce's theory of the icon: evidence is always potentially problematic - which is not a skeptical claim, for the contrary is true as well: problems are always potentially evident.

The strength of the Peircian concept of iconicity is thus that it permits the rational comparison of objects normally very far from each other: mathematics, logic, diagrams on the one hand, epistemology, phenomenology and psychology of perception on the other, and language, semiotics, and aesthetics on the third.



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<sup>i</sup>. It must be noted, however, that it is well-known that similarity within categories is psychologically perceived in a not completely symmetrical way. Rosch's and Lakoff's studies show that there less typical category members are perceived as more similar to the more typical members than vice versa. I.e., penguins and sparrows are display a range of similarities, but the penguin is seen as more like a sparrow than a sparrow is like a penguin.

54. One could add that the opposite seems to be the case regarding transitivity. Similarity is not transitive: if A is similar to B and B is similar to C, then A is similar to C, is generally not the case, not even if we restrict similarity to deal with one single type of quality. One red nuance may be similar to another which in turn is similar to a third nuance - without it being the case that the first and third are similar. Take on the other hand transitivity in signification: if A signifies B, and B signifies C, then A signifies C. This is, if not generally realized in discourse, then in general a possible, that is, valid construction in the system in question, at least given certain contexts. Peirce seems to admit this principle under the Scholastic notion "nota notae": "The logical principle Nota notae est nota rei ipsius, that is, the predicate of the predicate is the predicate of the subject, which is laid down in several places by Aristotle as the general principle of syllogism." (a planned continuation of "Syllabus", 1903, 3.590)

<sup>iii</sup> "Das Zeichen hat mit dem Bezeichneten inhaltlich zumeist nichts gemein, es kann ihm Heterogenes ebensowohl bezeichnen, als ihm Homogenes. Das Bild hingegen bezieht sich auf die Sache d u r c h Ä h n l i c h k e i t, und fehlt sie, so ist auch von einem Bilde nicht mehr die Rede. (...) Es wäre eine deskriptiv unrichtige Auffassung der Sachlage, wenn man denken würde, der ganze Unterschied bestehe darin, dass dieselbe Intention, die einmal an die Erscheinung eines dem gemeinten Objekt ä h n l i c h e n Objektes geknüpft ist, ein andermal an die Erscheinung eines ihm u n ä h n l i c h e n Objekts geknüpft sei. Denn auch das Zeichen kann dem Bezeichneten ähnlich sein, ja vollkommen ähnlich. Die Zeichenvorstellung wird dadurch aber nicht zur Bildvorstellung. Die Photographie des Zeichens A fassen wir ohne weiteres als Bild dieses Zeichens auf. Gebrauchen wir aber das Zeichen A als Zeichen für das Zeichen A, wie wenn wir schreiben: *A ist ein römisches Schriftzeichen*, so fassen wir A trotz bildmässiger Ähnlichkeit nicht das Bild, sondern eben als Zeichen.

Also die objektive Tatsache der Ähnlichkeit zwischen Erscheinendem und Gemeintem bestimmt keinen Unterschied. Gleichwohl ist sie für den Fall der Bildvorstellung nicht belanglos. Dies zeigt sich in der möglichen Erfüllung; und es ist ja nur die Erinnerung an diese Möglichkeit, welche uns die "objektive" Ähnlichkeit hier heranziehen ließ. Die Bildvorstellung hat offenbar die Eigentümlichkeit, daß, wo immer ihr Erfüllung zuteil wird, ihr als "Bild" erscheinender Gegenstand sich mit dem in erfüllenden Akte g e g e b e n e n Gegenstand durch Ähnlichkeit identifiziert. Indem wir dies als Eigentümlichkeit der Bildvorstellung bezeichnet haben, ist schon gesagt, daß hier die Erfüllung des Ähnlichen durch Ähnliches den Charakter der Erfüllungssynthese als einer imaginativen innerlich bestimmt." (LU II, 54-55)

<sup>iv</sup>. "An icon is a representamen which fulfills the function of a representamen by virtue of a character which it possesses in itself, and would possess just the same though its object did not exist." (5.73, Lectures on Pragmatism, 1903). In general, the relation of Peirce's

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sign descriptions to his pragmatism has been undervalued, cf. e.g. "It appears to me that the essential function of a sign is to render inefficient relations efficient, -- not to set them into action, but to establish a habit or general rule whereby they will act on occasion." (8.332, Letter to Lady Welby, Oct. 12, 1904). Peirce's sign distinctions are made with reference to a basically functionalist (in a pragmatic sense of the word) sign conception.

57. A walking stick evidently functions as a sign fooling hungry birds, but there's no conscious, let alone human intention behind this functioning.

58. Thus, it could be argued, Hilbert the father of formalism was no formalist (Hempel, in Benacerraf and Putnam (1982) makes this point). He insisted not on formalism but on finitism, that is, the formal means of proof should be finite, even if the mathematical content of the theorems proved might be infinite, and thus it was his attempt at solving the same infinity problem as the intuitionists, not to make formalisms the only goal of science.

59. Of course, one should not overrate the "turn" fact. Many foolish ideas have presented themselves as "turns".

<sup>viii</sup> A related quarrel loomed large in early Cognitive Science under the label of the "imagery debate". Do mental pictures form real parts of thought processes, and do the pictorial properties of such figures play effective roles in reasoning? Or are such pictures merely secondary to a basically symbolical, propositional thought process having pictures as epiphenomena or taking them as objects? Stephen Kosslyn's and Zenon Pylyshyn's old debate is even resurfacing these years. For a Peircean point of view, however, iconicity and propositionality is not in any way mutually exclusive, cf. ch. 4 on diagrams.

<sup>ix</sup>. Actually, this similarity problem involves Gödel's well-known incompleteness theorem and entails that the set of possible A's may not be delimited beforehand because of being not computable. Of course, such insights do not interest the crusader of difference.

<sup>x</sup>. Peirce makes exactly the same observation, in fact, when stating his pre-Popperian argument against the necessity of inductive reference.

<sup>xi</sup>. The reason why Goodman does not think this is the case is probably because he sees the idea of a "common property" as something which may easily be formalized in a discrete symbolic algebra. If phenomenon 1 has the property  $a$  and phenomenon 2 has the property  $a$ , then it takes no larger amount of insight to state that  $a = a$ . But if quality spaces are continuous, this proposition forms a mere surface referring to continuous transformations which need not be simple.

<sup>xii</sup>. Thus, there must be an internal contradiction in the theory; the idea of a "sémiotique naturelle" being impossible without the possibility to identify similar phenomena as similar. I hasten to say that this theory has in other respects, in particular dealing with narrative questions, proved fertile cf. ch. 17-18.

<sup>xiii</sup>. One can even find cooperations between the Nietzschean version and the extreme formalist version of anti-iconism, as for instance in the Italian Hjelmslevo-Nietzscheanism of Alessandro Zinna, a direct heir to the Ecoists' Hjelmslevo-Marxism of the seventies. When first you get the strange idea it is easy to see how this coupling works: Hjelmslev's sign-function destabilizes the sign to the extent that it is not a part of the language system, and his definition of form of expression and form of content,

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respectively, as the giving form to amorphous substance yields a place for Nietzschean active nihilists to undertake these creative acts of producing not only signs, but also expression and content forms.

xiv. Even if Eco does not know the Erlanger program and thinks that geometrical similarity is only invariance to scalar transformations (and not, for instance, projections, rotations, mirrorings, topological "stretchings" etc.).

xv. Already Peirce, by the way, raged against the mysticist claims that the Gizeh pyramids documented ancient Egyptian knowledge of the expansion of  $\pi$ , of  $e$ , the precise position of the North Star etc. - claims so well parodied in *Foucault's Pendulum*.

xvi. The argument here is structurally analogous to Kant's argument for the indispensability of an *Urteilkraft*, an ability to judge. How can a rule be applied to a particular case? You may not propose another rule to take care of the application, for then you run into an infinite regress: how can this second rule be applied, then, and so on. The same goes for the attempt to get rid of similarity by means of conventions: how do you apply the conventions to similar cases - by means of yet other conventions ... ?

xvii. We shall not go into Eco's arguments here except to notice that his treatment of the token-type problem is at best superficial. He obviously thinks that expression types are "ruled by a *ratio facilis*", that is, they are easy to produce and reproduce, even if he admits that tokens of content types may be more difficult to handle. But even expression tokens constitute a very complicated problem, the bundle of transformations securing the various kind of similarities between various subtypes of a type has been investigated by Douglas Hofstadter (1985) and myself (1992).

xviii In short, one could sum up, it conceives of the thing as if it was an animal. René Thom's idea of the semantics of the substantive as a generalized animal here receives an indirect support. It is a pity that the consequence of this theory are not more thoroughly discussed - does this ascription of generality and organic teleology precede categorization *as such*? If so, is it not a necessary corollary that animal species categories are prototypical categories, so that other empirical concepts receive their (deceptive?) natural-kind character from this implicit biology of meaning? (No wonder, if this be the case, that philosophers always chose animals when talking about natural kinds, from Kant's dog over "the cat is on the mat" and to Eco's own platypus ...).

xix. Nolan 1994, p. 230.

xx. In a variety of sources, we find indications of such a distinction, for instance Groupe  $\mu$ 's insistence on the autonomous existence of visual types as distinct from their virtual linguistic denomination (1992), Jakobson's distinction between privative and qualitative oppositions, and Medin and Barsalou's distinction between prototype and boundary classifications, respectively, in categorical perception (1987) - see ch. 10.

xxi. Eco's promising negotiation theory of semantics ought to be compared to Hintikka's game-theoretical semantics.

xxii Rather late in the development of his theory, Peirce saw the icon as being not general, even if the icon can be used as an icon of a continuity of objects which has the same quality: "... neither icon nor index possesses generality" ("A Guess at the Riddle", ca. 1890, 1.372). Peirce's development of the notion of hypoicons, including diagrams, introduces an important change to this idea, making general icons not only possible, but

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central to his epistemology (cf. ch. 4). The existence of general pictures has often been ridiculed in philosophy (Locke's famous triangle), but an important undercurrent continues a position cognate to Peirce's, see e.g. H.H. Price's overlooked *Thinking and Experience* (written in 1953 in the midst of Wittgenstein language game ecstasy in Britain) where the importance of "images as general symbols" is emphasized. Price makes a strong case for the central role of general images in the psychology of thought. Regarding diagrams as external representations, James Robert Brown's *Philosophy of Mathematics* (1999) makes, disguised as a phil-of-math introduction, a strong case for the possibility of pictures to "provide solid evidence, too, evidence which is as rigorous as any traditional verbal/symbolical proof." (192). Brown's involvement with computer aided mathematical imagery suggests that information technology may function as a partisan in the renaissance of the acknowledgment of general images.

xxiii. Peirce does not identify the copula with the verb to be, rather it is the very assertion of the predicate+subject structure. Here, he anticipates speech act theory by admitting questions, imperatives and the like as proposition types on a par with assertions.

xxiv. This problem of the reducibility of relations entails an enormous and still unfinished discussion. Löwenheim and Quine have, each in their way, tried to show that all logical propositions may be reduced to dyads, but the general validity of their results are still subject to doubt, cf. Burch 1991. As to actants in linguistics, René Thom (1980) has argued there is a formal, topological reason for the apparent four-actant limit in sentences.

xxv. Cf. Tom Short's (1983) important observation regarding "How to Make our Ideas Clear": less clear ideas are not prevented from participating in making more general ideas clear. It suffices that the role played by the less clear ideas in the clearer picture is, in fact, clear. Clarity is not necessarily built up from below using crystal clear basic elements but may reside on certain levels of organization, cf. the "bottomlessness" of mereology in contrast to set theory.

xxvi. Maybe this would also provide an answer to the old Husserl's famous problem in *Ursprung der Geometrie* (1936) about how original evidence might be transferred through history by means of symbols not containing this evidence ...

xxvii. The whole problem of the synthesis of the various profiles of the object is another, even if it possesses interesting analogues to the diagrammatic conception of the object. One profile of the object already contains hidden similarities in Peirce's conception.