THE SCANDAL OF METAPHOR
Metaphorology and Semiotics*

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1. THE METAPHORIC NEXUS
The "most luminous, and therefore the most necessary and frequent" (Vico) of all tropes, the metaphor, defies every encyclopedic entry. Above all because it has been the object of philosophical, linguistic, aesthetic and psychological reflection since the beginning of time. Shibles's 1971 bibliography on the metaphor records around 3000 titles; and yet, even before 1971, it overlooks authors like Fontanier, and almost all of Heidegger and Greimas—and of course does not mention, after the research in componential semantics, the successive studies on the logic of natural languages, the work of Henry, Group µ of Lièges, Ricoeur, Samuel Levin, and the latest text linguistics and pragmatics.

Secondly, the term metaphor for many authors—and this is true for Aristotle and Emanuele Tesauro—has served to indicate every rhetorical figure in general: the metaphor, as the Venerable Bede put it, is "a genus of which all the other tropes are species." To speak of metaphor, therefore, means to speak of rhetorical activity in all its complexity. And it means, above all, to ask oneself whether it is out of blindness, laziness, or some other reason that this peculiar synecdochical view of metaphor has arisen, whereby the part is taken as representative of the whole. It is very difficult indeed to consider the metaphor without seeing it in a framework that necessarily includes both synecdoche and metonymy—so difficult, in fact, that a trope that seems to be the most primary will appear instead as the most derivative, as the result of a semantic calculus that presupposes other, preliminary semiotic operations. A curious situation for a figure of speech that has been recognized by many to be the basis of every other.

Not the least of the contradictions encountered in a "metaphorology" is that, of the thousands and thousands of pages written about metaphor,

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few add anything of substance to the first two or three fundamental con-
cepts stated by Aristotle. In effect, very little has been said about a pheno-
menon concerning which, it seems, there is everything to say. The chroni-
cle of the discussion on metaphors is the chronicle of a series of vari-
atations on a few tautologies, perhaps on a single one: "A metaphor is that artifice which permits one to speak metaphorically." Some of these vari-
atations, however, constitute an "epistemic break," allowing the concept to drift toward new territories—ever so slightly, but just enough. It is with these variations that we will be concerned.

Every discourse on metaphor originates in a radical choice: either (a) language is by nature, and originally, metaphorical, and the mechanism of metaphor establishes linguistic activity, every rule or convention arising thereafter in order to discipline, reduce (and impoverish) the metaphoriz-
ing potential that defines man as a symbolic animal; or (b) language (and every other semiotic system) is a rule-governed mechanism, a predictive machine that says which phrases can be generated and which not, and which from those able to be generated are "good" or "correct," or endowed with sense; a machine with regard to which metaphor constitutes a break-
down, a malfunction, an unaccountable outcome, but at the same time the drive toward linguistic renewal. As can be seen, this opposition retraces the classical one between fusis and nomos, between analogy and anomaly, motivation and arbitrariness. But the problem is to see what ensues when we accept one or the other of the two horns of this dilemma. If it is meta-
phor that founds language, it is impossible to speak of metaphor unless metaphorically. Every definition of metaphor cannot but be circular, then. If instead there exists first a theory of language that prescribes "literal" lin-
guistic outputs; and if within this theory metaphor constitutes a scandal (i.e., if metaphor is a deviation from the system of norms)—then the theo-
retical metalanguage must speak of something to define which it has not been devised. A merely "denotative" theory of language can indicate those cases where language is incorrectly used but yet appears to say something—but such a theory is embarrassed to explain what and why. Consequently, it reaches for tautological definitions of the type: "There is a metaphor every time something unexplainable happens which the users of a lan-
guage perceive as a metaphor."

But the problem does not end there. When closely studied in connection with verbal language, metaphor becomes a source of scandal in a merely linguistic framework, because it is in fact a semiotic phenomenon per-
mitted by almost all semiotic systems. The inner nature of metaphors pro-
duces a shifting of the linguistic explanation onto semiotic mechanisms that are not peculiar to spoken languages; one need only think of the fre-
quently metaphorical nature of oneiric images. However, it is not a matter of saying that visual metaphors also exist, or that there perhaps also exist olfactory or musical metaphors. The problem is that the verbal metaphor itself often elicits references to visual, aural, tactile, and olfactory experiences.

And finally we must ask whether metaphor is an expressive mode with cognitive value. As an ornament metaphor is of no interest to us, because as such (i.e., saying more pleasantly that which can be said otherwise) meta-
phor could be explained wholly within the scope of a semantics of denotation. We are interested in metaphor as an additive, and not substitutive instrument of knowledge.

Nevertheless, seeing the metaphor as a cognitive tool does not mean studying it in terms of truth values. For this reason, discussions on the aletic logic of metaphor (i.e., whether a metaphor is truthful or not, and whether it is possible to draw true inferences from a metaphorical utterance) are not sufficient. It is obvious that when someone creates metaphors, he is, literally speaking, lying—as everybody knows. But someone who utters metaphors does not speak “literally”; he pretends to make assertions, and yet wants to assert seriously something that is beyond literal truth. How may one “signal” such an ambiguous intention?

While it may be possible, then, to bypass an extensional semantics of metaphor, it is impossible to avoid a pragmatics. From the point of view of conversational maxims (Grice 1967), the making of metaphors is a way of flouting the maxim of Quality (“Make your contribution one that is true”), that of Quantity (“Make your contribution to the conversation as informative as possible”), that of Manner (“Avoid obscurity and ambiguity”), and that of Relation (“Be relevant”). Someone uttering metaphors apparently lies, speaks obscurely, above all speaks of something other, all the while furnishing only vague information. And thus, if somebody who is speaking violates all these maxims, and does so in such a way as to not be suspect of stupidity or awkwardness, an implicature must click in the listener's mind: Evidently, that speaker meant something else. The problem that we want to discuss here is: if we want to avoid any appeal to ineffable intuition, on what encyclopedic rules must the solution of the metaphorical implicature base itself?

2. TRADITIONAL DEFINITIONS

Current dictionaries are usually uneasy about defining metaphor. “The transfer of the name of one object to another object through a relation of analogy” (but what is a relation of analogy in itself if not a metaphorical relation!); “The substitution of an appropriate term with one that is figurative” (qua species of the genus of figures, metaphor is defined by a synecdoche); "An abbreviated simile [. . . ]" These all fall into the classical definitions (cf. Lausberg 1960); and even in the best of cases, there are typologies of the various kinds of substitution, from animate to inanimate, from inanimate to animate, from animate to animate and from inanimate to inanimate, either in a physical or moral sense; or otherwise there are substitutions of names, adjectives, verbs, adverbs (cf. the most consistent study by Brooke-Rose 1958).

As far as synecdoche is concerned, it is spoken of as a "substitution of two terms for each other according to a relation of greater or lesser extension" [part for the whole, whole for the part, species for genus, singular for plural, or vice versa], while metonymy is spoken of as a "substitution of two terms for each other according to a relation of contiguity" [where contiguity is a rather fuzzy concept insofar as it covers the relations of cause/effect, container/content, instrument for operation, place of origin for original object, emblem for object emblematized, and so on]. And
Typology of rhetorical figures according to "classical" treatises.
when it is specified that the synecdoche carries out a substitution within the *conceptual content* of a term, while metonymy acts outside of that content, it is hard to see why the part for the whole is a synecdoche and the material for the object a metonymy—as though it were "conceptually" essential for an object to have constituent parts and not to be made of some material.

As will be seen in 11.2, this confusion is due to an "archeological" and extrarhetorical reason. It will also be shown that the synecdoche could be limited to semantic representations in the form of a dictionary, reserving metonymy for representations in the form of an encyclopedia. But in effect the dictionaries' embarrassment is the same as that of the classical manuals, which constructed a typology of rhetorical figures [still useful today for various aspects] that is quite admirable but riddled with ambiguities. If we examine the schematic digest in figure 1 we see immediately what the problems are with such a typology:

1. it considers tropes as operations on single words, precluding thus their contextual analysis;
2. it introduces, as we said above, the distinction synecdoche/metonymy on the basis of the unexamined category of *conceptual content*;
3. it does not distinguish between syntactic and semantic operations [asyn- deton and zeugma, for example, are two cases of figure by detraction, where the first concerns pure syntactic distribution, while the second implies semantic decisions];
4. above all, it defines metaphor as a trope characterized by a dislocation or leap, where /dislocation/ and /leap/ are themselves metaphors for "metaphor," and /metaphor/ is in its turn a metaphor, insofar as it means (etymologically) "transfer" or "displacement."

Because the tradition has left several disconnected notions, we will have to look for a theory of metaphor in the moment when it is proposed for the first time, that is, when it is proposed by Aristotle.

3. ARISTOTLE: SYNECDOCHE AND PORPHYRY'S TREE
Aristotle first confronts the issue of metaphor in the *Poetics* (1457b1-1458a17). In order to enliven language it is possible to use, beside common words, also foreign words, artificial coinages, lengthened, shortened, or altered expressions [in the *Rhetoric* many of these verbal games, actual puns, will be analyzed], and, finally, metaphors. The metaphor is defined as the recourse to a name of another type, or as the transferring to one object of a name belonging to another, an operation that can take place through displacements from genus to species, from species to genus, from species to species, or by analogy.

Clearly, in laying the basis for a "metaphorology," Aristotle uses /metaphor/ as a generic term: His first two types of metaphors are in fact synecdoches. But it is necessary to look carefully at his entire classification and at the examples woven into the commentary, if we are to find the origins of all that has been said in the centuries following on metaphor.

First type: from genus to species. Following the definition of Group \( \mu \) (1981), this type will now be called a *generalizing synecdoche in \( \Sigma \). The example used by Aristotle is /This ship of mine stands there/, since stand-
ing is the genus that contains among its species lying at anchor. An example that is more obvious and more canonical would be the use of \(/	ext{mortals}/\) for men, men being a species of the genus of mortals. A nesting or embedding of species within genus is supported by that which post-Aristotelian and medieval logic will call “Porphyry's tree.” A “perfect” Porphyry’s tree should include relations of entailment from the base toward the top, as in the following example:

```
Substance
  ↓
corporeal substances  incorporeal substances
  ↓
animate bodies  inanimate bodies
  ↓
sensible animate bodies  insensible animate bodies
  ↓
(animals)  (plants)
```

where, if animal, then necessarily animate body, and if animate body, then necessarily corporeal substance.

We may call the tree in the preceding examples “perfect,” because in truth the classic Porphyry’s tree introduces not only relations between genera and species (where the superior node always represents the genus of the inferior node, and the inferior always a species of the superior) but also the \(\text{differentiae specificae}\). And as I have shown elsewhere (1983), with the introduction of the \(\text{differentiae specificae}\) the tree no longer represents necessary relations of entailment. But within the scope of this essay it is enough to posit a “perfect” tree, constituted by an embedding of genus within species, or in lexical terms, by a hierarchy of hyperonyms and hyponyms. Such a hierarchy need not necessarily reproduce, as Porphyry’s tree suggested, a “real” or “universal” hierarchy, but a hierarchy of \(\text{meaning postulates}\). Thus, the logical structure of a perfect tree will be:

```
α
  ↓
A  B
  ↓
a₁  a₂
```

such that, if \(a₁\), then necessarily \(A\). According to the universe of discourse, and of the system of meaning postulates that are assumed, it will then be possible to construct different trees, all equally perfect, each dependent on a predetermined context.

In a given context where we are interested in the difference, say, between organic and inorganic matter, we would have a tree of this type:
Aristotle's example is /Indeed ten thousand noble things Odysseus did/. According to Aristotle, /ten thousand/ stands for "many," a genus of which it is a species. The clumsiness of the Aristotelian example is self-evident. In fact, /ten thousand/ is necessarily /much/ only in a Porphyry's tree that is based on a certain scale of quantity. One can well imagine another scale oriented toward astronomic sizes, in which ten thousand, even a hundred thousand, is a rather scarce quantity.

In other words, while it may seem more or less necessary for a man to be mortal, it is not as necessary that ten thousand be a lot. This notwithstanding, /ten thousand/ suggests "many" intuitively and with an undeniably hyperbolic tone, while /men/ for "mortals" is not intuitively perceived as an interesting figure of speech—both examples depend, however, on the same logical scheme. Probably, according to the code of the Greek language in the fourth century B.C., the expression /ten thousand/ was already overcoded (as a ready-made syntagm) and was used to designate a great quantity. In other words, Aristotle explains the modes of interpretation of this synecdoche taking as already disambiguated the synecdoche itself—a new example of confusion between the structure of language, or of the lexicon, and the structure of the world. On the other hand, /men/ for "mortals" would be felt to be so overcoded as to lack any rhetorical interest. The surprising conclusion is that metaphors of the second type (particularizing synecdoches in Σ) are logically correct but rhetorically insipid, while metaphors of the first type (generalizing synecdoches in Σ) are rhetorically enlivening, but logically unjustifiable.

To conclude, these first two types of metaphor reveal a mechanism that can be represented in two ways: on the left, according to logic diagrams, and, on the right, according to the interpretive passage between expression and content:

```
First type
Generalizing synecdoche

Second type
Particularizing synecdoche
```

For Aristotle the first two types are equivalent, as regards metaphorical validity. Group μ holds instead that the particularizing synecdoche is of difficult perceptibility, and opposes to the clarity of /black/ for "zulu," the difficulty of /zulu night/ for "black night." Logically speaking, it should be the contrary. The particularizing synecdoche should be too trivial, not too difficult. Given a specific Porphyry's tree, in the particularizing synecdoche one has to ascend from the inferior to the superior node, and the superior node cannot be but one; in the generalizing synecdoche, instead, one must descend from the superior node to one of many possible inferior nodes. But our objection would hold if the Porphyry's tree were indeed one and only one. Aristotle knew very well, without admitting so, that there
The inevitably cultural nature of a Porphyry's tree is a characteristic that might have perhaps escaped Aristotle (and Porphyry) but that now can no longer be overlooked, if we are to understand better those examples that Aristotle provides in his typology. Above all it explains why, with the generalizing synecdoche, the leap from genus to species appears intuitive in those particular cases where, in a given cultural context, a given implicit property is not only strictly codified, but, among various meaning postulates, is that most frequently made explicit in texts that have preceded the metaphorical expression.

Without taking into account these co-textual pressures it is impossible to understand why certain classical metaphors should be comprehensible. Take, for example, the metaphor (which is in effect a generalizing synecdoche) of /mortals/ signifying men. Simplifying the classical (and imperfect) Porphyry's tree, we would see that, given the genus of animals, and its subdivision into rational and irrational animals, the differentia specifica "mortal" belongs to different nodes of the tree:

```
animals
  rational animals  irrational animals
    mortals  immortals  mortals  immortals
      man  God  beasts  ?
```

so that it would be difficult to see why the synecdoche /mortals/ cannot refer to beasts as well.

A synecdoche of this type may be understood only if it appears in a context where an opposition takes place between two types of rational animals, to the exclusion of all the others, as a result of which—in that particular universe of discourse—the differentia "mortal" is attributable only to man:

```
rational animals
  immortal  mortal
    God  man
```

It should be noted that not even with the use of this tree does "mortal" entail "man" (if at all the inverse is the case). This would mean that, for metaphors of the first type, Aristotle prescribes a hierarchy from genus to species, which, however, he does not employ as an instrument to establish necessary relations. A metaphor of the first type is based upon the inference \((p \supset q) \cdot q \supset p\), which is logically inconsistent.

From a logical point of view, Aristotle's second type of metaphor seems more acceptable, since it represents a case of modus ponens: \((p \supset q) \cdot p \supset q\). But it is well known that a material implication can sound very unconvincing when considered from the point of view of natural language's logic. This metaphor is what Group \(\mu\) calls the particularizing synecdoche in \(\Sigma\), and
were in fact many possible trees—so well, that he allowed himself to con-
sider the first two types of tropes as being alike. At any rate, the so-called
metaphors of the first and second types have their own limitation: they let
us know what we already knew, that is, a given Porphyry's tree can be
outlined exactly because we know what we want it to express.

4. ARISTOTLE: METAPHORS OF THREE TERMS
This brings us to the third type. The Aristotelian example is two-fold:
"Then he drew off his life with the bronze" and "Then with the bronze cup
he cut the water". Another translation would have a bronze sword, in the
second case, cutting the flow of blood or life. These are, in any case, two
examples of a passage from species to species: /Drawing off/ and /cutting/
are two cases of the more general "taking away." This third type genuinely
seems to be a metaphor. It could be said right away that there is something
“similar” between drawing off and cutting. For which reason, as was done
in the preceding figure, logical structure and interpretive movement could
be represented thus:

![Diagram showing the third type of metaphor]

where the passage from a species to its genus and then from that genus to a
second species can take place from right to left or from left to right,
according to which of Aristotle's two examples one should want to discuss.

This third type so truly seems to be a metaphor that many of the later
theories work out of preference on examples of this type. Different
authors have represented this third kind of metaphor using the following
diagram, in which x and y are respectively the metaphorizing and meta-
phorized terms (Richards's vehicle and tenor), and where Z is the inter-
mediary term (the genus of reference) that permits the disambiguation:

![Diagram showing the disambiguation]

The diagram accounts for such expressions as /the tooth of the moun-
tain/ (peak and tooth partake of the genus "sharpened form"), or /she was a
birch/ (girl and birch partake of the genus "flexible body"). Contemporary
theories say birch acquires a "human" property or that girl takes on a "vege-
tal" property, and that, at any rate, the units in question lose some of their
own properties (cf., for example, the theory of transfer features in Wein-
reich 1972). Section 12 will be devoted to speaking of sememes proper,
which acquire or lose semes, semantic features, or semantic properties. But at
this point, two problems arise.

First, to define which properties survive and which must drop away, we
must by rights construct an ad hoc Porphyry's tree, and this operation
must be oriented by a universe of discourse or frame of reference (for one
of the first assertions of this principle, see Black 1955). Second, in this
operation of sememic intersection a phenomenon arises that is new with
respect to synecdoches or metaphors of the first two types. Consider the two-fold movement that is at the basis of both the production and the interpretation of /tooth of the mountain/:

Production

<table>
<thead>
<tr>
<th>Peak</th>
<th>Sharp</th>
</tr>
</thead>
</table>

Interpretation

<table>
<thead>
<tr>
<th>Tooth</th>
<th>Sharp</th>
</tr>
</thead>
</table>

In a synecdoche, in which, for example, a peak is named as /something sharp/, peak would lose some of its characteristic properties (that of being mineral, for example) and share instead with the genus to which it is reduced some morphologic properties (in particular, that of being sharp). In a metaphor of the third type, peak loses some properties in becoming a sharp thing and regains others in becoming a tooth. While peak and tooth, however, have in common the property of sharpness, their mutual comparison also focuses on those very properties that stand in opposition. This is so much the case that the phenomenon is referred to as a transfer of properties, as we mentioned above (peak becomes more human and organic, tooth acquires the property of being mineral). What makes theories of transfer features questionable is always the fact we cannot tell who gains what and who loses instead something else. More than of a transfer we could speak of a back-and-forth of properties. This phenomenon is what in section 6 will be called condensation, as it was called by Freud. And it is the phenomenon that characterizes the fourth type of metaphor. But if we consider further what happens in /tooth of the mountain/, we realize that the third type of metaphor is in effect a metaphor of a fourth type, because it sets in motion not three but four terms, whether these are expressed or not in the linguistic manifestation: peak stands to mountain as tooth stands to mouth. Alternatively, girl stands to the rigidity of a male body as birch stands to the rigidity of an oak tree—otherwise one could not understand with respect to what a birch and a girl are flexible. At any rate, what likens the metaphor of the third type with the fourth type is that mere identifications or absorptions (from species to genus) are no longer the rules of the game: now it is both “similarity” and “opposition,” or identity and difference, that are in question.

5. ARISTOTLE: THE PROPORTIONAL SCHEME

The metaphor by analogy or by proportion is a metaphor with four terms, which are no longer A/B = C/B (e.g., peak is to the genus of sharp things in the same way as tooth) but A/B = C/D. The term /cup/ has the same relation to the term /Dionysus/ as has the term /shield/ to the term /Ares/. In this way, the shield can be defined as /the cup of Ares/ or the cup as /the shield of Dionysus/. And again: Old age is to life as sunset is to day, and thus old age can be defined as /the sunset of life/ and the evening as /day's old age/.

Aristotle's definition has always seemed superb for its concision and clarity. In fact it is, and undoubtedly the idea of finding a sort of propositional function, in which infinite concrete instances can be inserted, represented a stroke of genius. Even more so given that this proportional
formula permits the representation of even those cases of strict catachresis where the vehicle stands for a tenor that, lexically speaking, does not exist: \( A/B = C/x \). Aristotle provides his own linguistically complex example, but we can also turn to two familiar catachreses, \(/\text{the leg of the table}/\) and \(/\text{the neck of the bottle}/\).

It becomes clear right away that the way leg is related to body is not the same way in which neck is to body. The leg of a table resembles a human leg provided we have a frame of reference that puts into relief the property of "support," while the neck of a bottle is not exactly the support of a cork nor, on the other hand, of the entire container. It seems that the analogy on leg plays on functional properties at the expense of morphologic similarities (themselves reduced to very abstract equivalences, quantity having been put aside as nonpertinent), while the analogy on neck drops the functionally pertinent features and insists on those that are morphological. Which is to say that, yet again, different criteria for constructing Porphyry's tree are in question—if it were even still possible, though, to speak of Porphyry's tree tout court. Given an unquestionable format for Porphyry's tree (i.e., putting in parentheses the cultural or co-textual conditions of its construction), the tree that is chosen explains how and why one can think of the first three types of metaphor from either a productive or an interpretive point of view. But consider the typical situation of a metaphor of the fourth type, for example, cup/Dionysus = shield/Ares. How can we accommodate it into any Porphyry's tree?

To begin with, the relation cup/Dionysus, according to the criteria of the later theories of rhetoric, is a relation of a metonymic type. Cup and Dionysus are commonly associated by contiguity, through the relation subject/instrument, through a cultural habit (without which cup could stand for many other objects). This relation is not at all amenable to being expressed by Porphyry's tree, unless we want to draw broadly inclusive equivalencies (of the type cup belongs to the class of things characterizing Dionysus, or alternatively, Dionysus belongs to the class of all beings that use cups). And the same goes for the relation shield/Ares. In other words, it is very difficult to recognize in this relation a case of embedding of genus within species.

The case of man/animal presents us with an analytic relation, while that of cup/Dionysus presents us with a synthetic relation. Man is mortal in virtue of the definition of the term *man*, while cup does not necessarily refer to Dionysus except in a very restricted co-textual situation in which the various pagan gods are listed iconographically along with their characteristic attributes. Panofsky and Caravaggio would both hold that if *Dionysus then cup*; but they themselves would agree that while it is not possible to think of a man who is not animal, it is always possible to think of Dionysus without thinking of cup. Even if one should grant that it is possible to group together the relations cup/Dionysus and human/animal, a new problem surfaces: Why should Dionysus be placed in a relation with Ares and not, for example, with Ceres, Athena or Vulcan?

While it is prudent to exclude the speaker's intuition from this type of consideration (since the speaker's intuition is determined by cultural contexts), it is pretty intuitive that Aristotle himself would find it difficult to
name the spear of Athena as the /cup of Athena/ and the wheaten sheaves of Ceres as the /shield of Ceres/ (even if "baroque" contexts where that is possible are not excluded). Intuition says that shield and cup can entertain a relation because both are round and concave (round and concave in different ways, yes, but therein is the metaphor's cleverness, in making us see certain a resemblance between different things). But what matches Dionysus and Ares? In the pantheon of pagan gods it is their diversity that unites them (strange oxymoron). Dionysus the god of joy and of the peaceful rites, Ares the god of death and war: a play of similarities, then, mingling with dissimilarities. Cup and shield become similar because of their roundness, dissimilar because of their functions; Ares and Dionysus are similar because both are gods, dissimilar because of their respective domains of action.

Before this nexus of problems, a few observations immediately arise. What was not clear and evident to Aristotle was thereafter developed at different stages of later metaphorology.

6. PROPORTION AND CONDENSATION
The metaphor with four terms does not set into play verbal substances alone. No sooner has the proportion been established than it is possible to see, as something incongruous, Dionysus actually drinking out of a shield or Ares defending himself with a cup. In the first two types of metaphor, the metaphorizing term absorbs (or confuses itself with) the metaphorized term, much as a figure enters a multitude—or leaves it—without our cognitive habits coming into question. At best, the result is something impoverished, both conceptually and perceptually. In the third type of metaphor, instead, a superimposition of plant and girl is created that is almost visual, as in the fourth type.

Albeit confusedly, Aristotle realizes that by naming one thing with something else's name one denies the first thing those qualities proper to it. Ares's shield could also be called "cup without wine" (Poetics 1457b32). Albert Henry (1971) notes that this is no longer a metaphor, but instead a "secondary phenomenon," a consequence of the preliminary metaphor. That is true, but it means that, as the metaphor starts to be understood, the shield becomes a cup, even as this cup, while remaining round and concave (though in a different way from the shield), loses the property of being full of wine. Or, in reverse, one forms an image wherein Ares possesses a shield that acquires the property of brimming with wine. In other words, two images are conflated, two things become different from themselves, and yet remain recognizable, and there is born a visual (as well conceptual) hybrid.

Could it not be said that we have before us a kind of oneiric image? And in fact the effect of such a proportion having been established is quite like what Freud (1900) called "condensation": where noncoincident traits can be dropped while those in common are reinforced. The process is typical not only of dreams but also of jokes ("Witzent"): that is, of those puns or compound words (ψυχραχ) (Rhetoric 1406b1), or even better, of those witticisms (αστεια) (1410b6), which seem so similar to some of the categories of Witze, Kalauer, and Klangwitzte analyzed by Freud (1905). If the Freudian
typology can be compared to a typology of rhetoric on the model of that proposed in Table 1, there can be no doubt that, at least, the final result of the Aristotelian proportion is a process very much like Freudian condensation, and that this condensation, as will be better demonstrated later, can be described as far as its semiotic mechanism is concerned in terms of the acquiring and losing of properties or semes, however we should want to call them.

7. DICTIONARY AND ENCYCLOPEDIA

But Aristotle's proposal opens up a second question. Those properties set into motion by the third and fourth types of metaphor do not have the same logical status as those set in motion by the first two types of metaphor. To obtain the condensation cup/shield, it is necessary to activate properties or semes such as "round" and "concave," "war" and "peace," "life" and "death." It is clear here that a difference is being outlined between a semantic description in the form of a dictionary and a description in the form of an encyclopedia (cf. Eco 1976), or even, with inconsistent variations, between $\Sigma$ properties and $\Pi$ properties (Group $\mu$ 1981), between semantic properties and semiological properties (Greimas 1966), or between dictionary markers and world knowledge.

A dictionary is supposed to set forth only those properties that are necessary (what classical rhetoric would call "conceptual content"), while the encyclopedia includes all those units of knowledge that concern the contexts in which a given lexeme will occur (and beyond those the metonymic contiguities, and any inferences in the form of extralinguistic knowledge). Now, an "empirical" dictionary would define a chair as an "item of furniture, made of wood, with a back and four legs." In this definition there are not only properties linked by relations of entailment (according to a specific Porphyry's tree): it is certain that if chair then item of furniture, if chair then object for sitting upon, but it is not at all given that if chair, then wooden object and if chair then four legs. A "logical" dictionary, instead, takes into account only those properties that are entailed; a chair may be a piece of furniture (which implies also that it is a solid object, if the system of entailed meaning postulates is well constructed), but that does not mean that the object is made of wood and has four legs, because there might also be broken chairs with less than four legs, made out of the most diverse materials.

As I have explained elsewhere (cf. Eco 1979, 8.5.2), the difference between dictionary (or analytic) properties and encyclopedic (or synthetic) properties is the following: dictionary properties are artifices of metalinguistic economy by which it is possible to avoid listing all of an object's encyclopedic properties. A chair has the encyclopedic property of being heavy and transportable (unlike a house, which is heavy and not transportable), but these properties need not be listed since they are already included in the dictionary marker "piece of furniture." If the dictionary properties did not exist as metalinguistic artifices, the sememic representation of a lexeme would be a long and unending list of encyclopedic properties. Dictionary properties are the "stenographic" artifice whereby certain items of knowledge that will not be discussed in a given co-text are taken
for granted. In the displacement from shield to cup, the fact that both objects are physical and hand-crafted is not a matter of argument. The displacement makes pertinent, instead, only the fact that those objects are round and concave, as well as the diverse properties whereby one object protects the body and is usually marked for vertical concavity, and the other contains liquid and is usually marked for horizontal concavity.

Group $\mu$ distinguishes between an endocentric series of *semes* or "conceptual" properties (mode $\Sigma$) and an exocentric series of *parts* or empirical properties (mode $\Pi$). An example of an endocentric series would be the entailment oak–tree–plant (curiously, the authors consider only one direction—"If $x$ is a tree than it is either a poplar or an oak or a birch"—without considering that if $x$ is a poplar then it is necessarily a plant; but the two directions of entailment are obviously complementary). An example of an exocentric series would be the relation between a tree and its parts: trunk and branches and leaves. The distinction between the two "modes" could be represented thus:

\[
\begin{array}{c}
\text{Vegetal} \\
\downarrow \\
\text{Tree} \\
\downarrow \\
\text{Poplar or birch or pine}
\end{array} \quad \begin{array}{c}
\text{Trunk} \\
\downarrow \\
\text{Branches} \\
\downarrow \\
\text{Leaves}
\end{array}
\]

Group $\mu$ knows very well that "these endoseries [=endocentric series] exist in posse in the vocabulary; but it is we who trace their existence then, for each word or concept can in principle be the crossing point of as many series as it contains semes" (1981:100). But after having shown this critical awareness of a dictionary's metalinguistic mechanisms, Group $\mu$ does not draw from that the consequences it should, and falls into a sort of Aristotelian identification of categories with things. Consider the way in which the various metaphorical constructions are explained by means of a double synecdochic exchange, from a generalizing synecdoche ($\text{Sg}$) to a particularizing synecdoche ($\text{Sp}$) and vice versa, whether in the $\Sigma$ mode or the $\Pi$ mode.

*General scheme*

\[
D \rightarrow \{I\} \rightarrow A
\]

\[
\begin{align*}
\text{a) } (\text{Sg + Sp}) \Sigma & \quad \text{possible metaphor} \\
\text{b) } (\text{Sg + Sp}) \Pi & \quad \text{impossible metaphor} \\
\text{c) } (\text{Sp + Sg}) \Sigma & \quad \text{possible metaphor} \\
\text{d) } (\text{Sp + Sg}) \Pi & \quad \text{impossible metaphor}
\end{align*}
\]

\[
\begin{array}{c}
\text{Birch} \\
\downarrow \\
\text{Flexible} \\
\downarrow \\
\text{Girl}
\end{array} \quad \begin{array}{c}
\text{Hand} \\
\downarrow \\
\text{Man} \\
\downarrow \\
\text{Head}
\end{array} \quad \begin{array}{c}
\text{Green} \\
\downarrow \\
\text{Birch} \\
\downarrow \\
\text{Flexible}
\end{array} \quad \begin{array}{c}
\text{Boat} \\
\downarrow \\
\text{Bridge} \\
\downarrow \\
\text{Denture}
\end{array}
\]
The rule proposed is that the term I, which remains absent from the metaphorical interpretation, must be a synecdoche of the term of origin D, while the term of arrival A must be synecdoche of I. The condition is that A and D must be on the same level of generality. According to mode Σ the resulting metaphor will be based on semes common to D and A, while in mode Π it will base itself on their common parts. The material part must be smaller than the whole, while the semic part must be more general.

Example (a) is incorrect. That a birch is flexible is a Π property, unless one changes the dictionary tree and considers the genus of all flexible things. If we look again carefully at the preceding scheme, a (more) acceptable example would be /poplar of the desert/ for "palm-tree" (from palm to tree and from tree to poplar).

Example (b) is correct, because one cannot say /he shook my head/ in place of "he shook my hand." But the mechanism it exemplifies is not at all impossible. The oneiric situation (or an instance of Witz) in which /nose/ leads to 'man' and from there descends to "penis," is not at all unthinkable. Why should nose be able to metaphorize penis, and hand not be able to metaphorize head? The answer is suggested at various moments by Greimas (1966): Two semes can be opposed or joined according to their classeme (which is nothing other than a contextual selection; cf. Eco 1975, and 1979). Nose and penis have in common the characteristic of being "appendages" and of being "long" (besides the fact that both are canals, both are pointed and so on). A head instead has semes of "roundness," "apicality," and "oneness," which a hand does not have. The substitution, then, is not based only on a play of synecdoches—it puts into question a semic relation that is far more complex. Only in this way does the effect of superimposition that is typical of the processes of condensation take place.

As regards example (c), again it seems that Group μ has chosen as dictionary (or Σ) properties those that seem more appropriately Π properties—without making clear the contextual reasons that make it necessary to assume them as dictionary properties in the first place. It is true, though, that the metaphor in (c) appears impossible inasmuch as it passes from a genus to a species, proceeding then from that species to another genus that has nothing in common, however, with the first. According to Group μ such would be the case in a passage from the genus "iron" to the species "blade" and then from the species "blade" to the genus "flat object." The coexistence in one same object of ferrous and flat qualities would not produce an intersection of properties.

Finally we come to case (d). Group μ's example is rather obscure, but could be exemplified by the passage from /crude oil/ to "precious" (a Π property of /crude oil/); from the property "precious" one ascends to another lexeme to which the same marker could be ascribed, for example, /gold/, and there would follow the substitution gold/oil in a metaphor such as /the gold of the sheikhs/ or /black gold/. But even in this case other properties would come into question, such as "black" or "of the sheikhs," which Group μ's scheme does not take into consideration. These are all problems that we will try to resolve further on.

At the close of this discussion of the Aristotelian proposal, we can say that two clusters of problems have been brought into relief: (1) the exist-
ence of processes of condensation, which the proportional relation is hard put to explain; (2) the need for a more flexible consideration of the relations between dictionary properties and encyclopedic properties, which are subdivided according to contextual exigencies. Why then has Aristotle's proposal held myriad interpreters in fascination through the centuries? Two facts have played a role in the matter, that is, responsibility lies with a misunderstanding, on the one hand, and an extremely lucid insight, on the other.

8. THE COGNITIVE FUNCTION
That misunderstanding or ambiguity arises when Aristotle, in passing from his consideration of the first three types of metaphor to the fourth type, changes his game without even being aware of it. In speaking of the first three types, he explains how a metaphor is produced and understood, while in speaking of the fourth type he explains what a metaphor enables us to know. In the first three cases he says how the metaphorical production and interpretation function (and that he can do because the mechanism, which is synecdochic, is rather simple and is based on the inflexible logic of Porphyry's tree, however that tree is selected). In the fourth case Aristotle tells what the metaphor says, or in what way it increases our knowledge of the relations between things—though he explains it only partly. The metaphor /cup of Ares/ certainly raises the suspicion that some indeterminate relation exists between cup and shield, and between Ares and Dionysus. But the theory of condensation explains that what we learn is not just that. The Aristotelian proportion is an empty schema where infinite pieces of encyclopedical information can be inserted; but what a metaphor allows us to know has more to do with those inserted items of knowledge, than with the schematic relation that is filled up. The later periods of the metaphorological tradition hold up the theory of the proportion or analogy as an explanation of the metaphor's mechanism—at the cost of a self-debasing chain of tautologies [e.g., "A metaphor is that thing which permits us to have knowledge that is analogical, in other words, metaphorical"]—and frequently ignore the most ingenious and vigorous of Aristotle's conclusions, that the metaphor is not only a means of delight but also, and above all, a tool of cognition (as Freud, moreover, was able to show with regard to Witze).

When reading the Aristotelian texts (the Poetics and the Rhetoric), one is struck by the fact that examples of metaphor often appear that are not convincing, where the translator-philologist himself admits to not being able to grasp the obviousness of a proportion assumed as self-evident. One often has the same response, moreover, when confronting texts from distant cultures. Take, for example, the Song of Songs: "I have compared thee, O my love, to a company of horses [ . . . ]" (Song 1:9); "Thy teeth are as a flock of sheep which go up from the washing" (4:2); "[Her] legs are as pillars of marble [ . . . ]" (5:15); "Thy nose is as the tower of Lebanon [ . . . ]" (7:4). Notice that these are similes, and therefore give the proportion in advance rather than suggest it in the form of an enigma. If a metaphor were only the contraction of an already posited proportion so that, from the perspective of production, one starts from the simile and, interpretively speaking,
one arrives at it—a simile would always be convincing. And yet it cannot be denied that one is led to see sheep coming out of the water as *shaggy, dripping* creatures (bleating and smelly, as well): a terrible premise on which to build an analogy on the "black and comely" maiden whose “two breasts are like two young does that are twins" (7:3).

Nevertheless, we can imagine how the Biblical poet drops all those properties of sheep negatively identified above, so as to preserve only the characteristic of their *aequalitas numerosa*, their splendid unity in variety—as well as their whiteness. It is understood that the poet is able to do so because within his culture these most probably were the properties associated with sheep, *at least within the poetic tradition*. And it is also clear that the qualities chosen to define the beauty of a healthy and sturdy country girl, destined to tend the flocks among the rocky Palestinian hills, single out her upright solidity (like that of columns), her unbroken state of perfection, in the same way that it is not so much the cylindrical shape of columns that is preeminently chosen as is their whiteness, instead, and their grace of line.

But to reach these conclusions one must undertake an impassioned "hermeneutic circle": One assumes a code, which is verified against the simile, whose metaphorical transformations are appraised in advance; or one starts from the simile in order to infer a code that makes it acceptable; one starts to become familiar, at one and the same time, with both the Biblical poet's aesthetic ideology and the maiden's properties, in other words, one learns something extra about the maiden *and* about the intertextual universe of the Biblical poet, simultaneously. Analyzing further this process of trial and error, we would realize that we are dealing with multiple inferential movements: hypothesis (or abduction), induction, and deduction. The same process takes place when we understand a catachresis—not the institutionalized catachresis, transformed into a codified lexeme (e.g., the leg of a table), but the institutive catachresis, which later will be identified by many as the "auroral" moment of language. /Inflationary spiral/ is an institutive catachresis (language creates metaphors even outside of poetry, simply out of a need to find names for things). And if institutive catachreses require interpretive labor, it is because the latent proportion (which could be expressed in a simile) does not exist before the metaphor: it must be found, whether by the person who invents the catachresis or by the person interpreting it (at least, for a brief stretch of the trope's circulation), after which discovery language absorbs the trope, lexicalizes it, and registers it as an overcoded expression.

This is precisely what Aristotle meant to say when he assigned a cognitive function to metaphor—not only when he associates metaphor with enigma, an extended sequence of metaphors, but also when he says that creating metaphors "is a sign of a natural disposition of the mind," because knowing how to find good metaphors means perceiving or grasping the similarity of things between each other (τὸ ὅμοιον διαφέρειν) (*Poetics*, 1459a6-8). But if the proportion between cup and shield and between Ares and Dionysus were already overcoded, that metaphor would not say anything other than *what is already known*. If it says something new, it means that either (a) the proportion was not so commonly accepted, or (b) if it
was accepted, it was then soon forgotten. And thus the metaphor posits ("posits" in a philosophical sense, but also in a physical sense, as in "putting before the eyes," το προ ομιχλάτων πανειν) a proportion that, wherever it may have been deposited, was not before the eyes; or it was before the eyes and the eyes did not see it, as with Poe's purloined letter.

To point out, or teach how to see, then. To see what? The likeness between things, or the subtle network of proportions between cultural units (i.e., the fact that sheep are indeed unique and equal in their variety, or the fact that a certain culture sees a flock of sheep as an example of unity within variety)? To this question Aristotle gives no answer, as was only appropriate for one who had identified the modes of being of Being (the categories) with the modes of being of language.

What Aristotle understood was that metaphor is not an ornament (κοσμός), but rather a cognitive instrument, at once a source of clarity and enigma:

Accordingly, it is metaphor that is in the highest degree instructive [. . . ] It follows, then, for style and reasoning [enthymemes] alike, that in order to be lively [lively expressions are the ἀστεία, which in the Baroque period will be the metaphorical witticisms] they must give us rapid information. Consequently, we are not highly gratified by enthymemes that are obvious—and "obvious" means absolutely plain to everyone, not demanding a bit of mental inquiry—nor by those which, when stated, we do not understand. What we like are those that convey information as fast as they are stated—so long as we did not have the knowledge in advance—or that our minds lag only a little behind. With the latter two kinds there is some process of learning (Rhetoric 1410b14-25).

Aristotle provides the most luminous confirmation of metaphor's cognitive function when he associates it with mimesis. Paul Ricoeur (1975) warns that if metaphor is mimesis it cannot be an empty, gratuitous game. In the Rhetoric (1411b25ff.) there is no room for doubt: the best metaphors are those that "show things in a state of activity." Thus metaphorical knowledge is knowledge of the dynamics of the real. That definition seems rather restrictive, but it can be reformulated as: the best metaphors are those in which the cultural process, the dynamics itself of semiosis, shows through. Aristotle defeats right from the start the theorists of the easy metaphor, whether they are the classical moralists, who feared metaphor's cosmetic and deceitful nature, or the Baroque immoralists, who privileged its "spicy" nature, or finally, the current semanticists, who see rhetorical ornatus, at the most, as a structure even more superficial than surface structure, incapable of tapping deep structures, whether these are syntactic, semantic, or logical. To all of these theorists Aristotle had already said: "Metaphors [. . . ] should be drawn from objects that are related to the object in question, but not obviously related; [in rhetoric] as in philosophy the adept will perceive resemblances even in things that are far apart" (1412a11-12).

And that these likenesses were not only in things but also (perhaps above all) in the ways in which language defines things, the philosopher knew well when he lamented (1405a25-27) how pirates in his time had the gall to call themselves 'purveyors,' and how wily the orator is in calling a
crime an error or an error a crime. All that pirates had to do, it seems, was find a genus that fitted their species and adapt to the purpose a creditable Porphyry's tree; it is "true" that they transport merchandise by sea, like commercial purveyors. What is "manipulatory of reality," or "ideological" is to select only that one out of all the other properties that were characteristic of pirates, and through that choice make themselves known, put themselves before others' eyes in this perspective and under that particular description.

9. THE SEMIOSIC BACKGROUND: THE SYSTEM OF CONTENT

9.1. The medieval encyclopedia and the analogia entis
We have seen how Aristotle's limitation consists in his identifying the categories of language with the categories of being. This identification is not questioned by post-Aristotelian rhetoric—from the Rhetorica ad Herennium, through Cicero and Quintilian, and all the way to the medieval grammarians and rhetoricians—which in the meantime works out the traditional classification of figures. However, a panmetaphorical attitude is established in the Middle Ages, which deserves a brief discussion, since it helps to resolve (even if in a negative manner) the question with which we are concerned.

Saint Paul had already affirmed that "[. . .] now we see through a glass, darkly" (1 Corinthians 13:12). Medieval Neoplatonism gives a metaphysical frame to this hermeneutic tendency. In a universe that is nothing other than an emanative outpouring from the unknowable and unnameable One down to the furthest ramifications of matter, every being functions as a synecdoche or metonymy of the One. How this referential or declarative potential of entities manifests itself with regard to their prime cause is not important from the present viewpoint, and, if at all, has more to do with a theory of symbol. But when Hugh of Saint Victor affirms that the "entire sensible world is, so to speak, a book written by the hand of God [. . .] All visible things, visibly presented to us by a symbolic instruction, that is, figured, are proposed for the declaring and signifying of things invisible" (Didascalicon, in Migne, Patrologia latina, CLXXVI, col. 814), he gives us to understand that there exists a sort of code that, assigning to things emergent properties, allows them to become metaphors for supernatural things, in accordance with the traditional theory of the four levels of exegesis (the literal, allegorical, moral, and anagogical). Raban Maur, in the De universo, gives a clue to this operation: "In it [in this book] the nature of things is amply treated, and so also is the mystical meaning of things" (P.L. CXI, col. 9). This is the project taken up in the bestiaries, the lapidaria, the imagines mundi, all formed on the Hellenistic model of the Physiologus. Certain properties are predicated of every animal, plant, part of the world, or even in nature, and, on the basis of an identity between one of these properties and one of the properties of the supernatural being that is to be metaphorized, a correlation is established. A network of cultural information exists, which functions as a cosmological code.

The code is ambiguous, nevertheless, since of all the properties there are
to choose from it chooses only a few, and those are contradictory. The lion erases his tracks with his tail to throw the hunters off his track, and is thus a figure of Christ cancelling the traces of sin; but in Psalm 21 the terrible maw of the beast—"Salva me de ore leonis"—becomes a metaphor of Hell, and "per leonem antichristum intelligitur" definitively.

Even though medieval Neoplatonism was not aware of it (but the medieval rationalists, from Abelard to Ockham, would not fail to realize this), the universe, which seems to be a rhizomatic or mazelike network of real properties, is in effect a mazelike network of cultural properties, and those properties are attributed both to the earthly beings and to the heavenly beings in order that metaphorical substitutions may be possible.

What medieval Neoplatonists knew was that, in order to decide whether the lion must be seen as a figura Christi or as a figure of the Antichrist, a context is necessary. The tradition provides a typology of possible co-texts; so that the best interpretation is always the one recorded by some (intertextual) auctoritas. That the question is merely one of cultural networks, and not of ontological realities, Thomas Aquinas was well aware, and he disposed of the problem in two ways. On the one hand, he admits that there is only one portion of reality in which things and events themselves acquire metaphorical and allegorical value, inasmuch as they have been created and disposed thus by God himself, namely, sacred history, and for this reason the Bible in itself is literal (it is the things of which it speaks literally that are figures). There remains as well the figure of the parable, as it is used in poetry (but in this sense one need not leave the bounds of classical rhetoric). But, on the other hand, insofar as it is necessary to speak of God in accordance with the dictates of reason, and given that God is at an immense distance from the created world, with which He is not in a Neoplatonic identity, but which He keeps alive through an act of participation, Aquinas turns to the principle of the analogia entis. The idea is Aristotle's, and it preserves his lack of any distinction between linguistic and ontological categories. Inasmuch as God's perfection transcends that of His creations, it is impossible to speak of Him univocally, nor can one limit oneself to speaking of Him equivocally; He must be spoken of, then, through analogy, or in other words, by means of a proportion between cause and effect. Through a kind of metonymy, therefore, which is held up, however, by a proportion of a metaphorical type.

What is the foundation of the analogy? Is this a case of a logical-linguistic artifice, or of an actual ontological network? The interpreters are discordant. Among the modern exegetes, Gilson admits that "what Saint Thomas calls our knowledge of God consists in our aptitude for forming affirmative propositions about Him" (1947). We only have to push a bit further to affirm, with no threat to Thomist orthodoxy, that the analogy speaks only of the knowledge men have of reality, of their way of naming concepts, and not of reality itself. The metaphor derived from that knowledge is a suppositio impropria based on a proportion between intentiones secundae, where, in other words, the expression /dog/ (whether verbal or visual) does not mean the real dog, but rather the word /dog/ or the concept of dog (McInerny 1961). In a universe comprehensible by means of the proportion between God and things, the fundamental mechanism is actually
found in an identity between names, even if for Thomas (unlike the nominalists) those names reflect the properties of things.

9.2 Tesauro’s categorical index
An interesting return to the Stagyrite’s model is found in the Cannocchiale aristotelico (The Aristotelian Binocular) of Emanuele Tesauro (1655), written at the very height of the Baroque period. From Aristotle Tesauro inherits the tendency to call every trope and figure a metaphor. We will not speak here of the detail and enthusiasm with which the author of the treatise studies puns both in single words and in actual microtexts, and of how he extends the metaphorical mechanism to visual puns, painting, sculpture, actions, inscriptions, proverbs, truncated phrases, laconic messages, mysterious characters, hierograms, logographs, cryptograms, gestures, medallions, columns, ships, garters, chimeric bodies. We will not speak of those sections in which Tesauro borders on modern speech-acts theory, showing how language states, narrates, affirms, denies, swears, corrects, holds back, exclaims, doubts, approves, admonishes, orders, praises, derides, invokes, questions, thanks, vows, and so on. [With regard to all these aspects and to the others of which I will speak, I direct the reader to Speciale’s reconstruction [1978].] Tesauro knows that metaphors are not created out of a pure joy of invention, but that they impose on one a labor to master which takes practice.

The first exercise is the reading of catalogues, anthologies, hieroglyphic collections, medallions (and their reverse sides), emblems—in a way, a pure invitation to intertextuality, to the imitation of the “already said.” But the second stage of the exercise presupposes learning a combinatory mechanism.

Tesauro invites his reader to draft a categorical index, that is, a model of an organized semantic universe. Such a model begins with Aristotle’s categories (Substance, Quantity, Quality, Relation, Place, Time, Position, Possession, Activity, Passivity [cf. Categories 1b25-2a8]) and then organizes under each of these categories the various members that are inclusive of everything susceptible to such categorization. Suppose we have to make a metaphor on a dwarf. We leaf through the categorical index until we find the entry “Quantity”; we then identify the concept “Little things,” and all such microscopical things as may be found under that rubric may be divided still further according to contextual selections (as we would say now): astronomy, human organism, animal, plant, etc. But an index organized by substances would have to be integrated with a second index in which each substance were analyzed according to the particles that define how the object in question manifests itself (e.g., under the category of Quantity we would then have to find “what measurements” it has, “what weight” it has, “how many parts” it has; and under Quality there would be the specifications “whether it is visible,” “whether it is hot,” and so on). As can be seen, this is essentially a system of content organized as an encyclopedia. At this point, we will find that the smallest measure is the Geometric Thumb, and we will say that in order to measure a dwarf’s body, a geometric thumb would be too gross a measure.

While he is a careless structuralist, Tesauro knows nevertheless that it is
no longer ontological relations but the structure itself of language that guarantees metaphorical transfers. Look, for example, at the Aristotelian metaphor of old age as the sunset of life (or of youth as spring). Tesauro still proceeds by analogy, but the relation is one of *contiguity in the index*. This is how the transfer is structured:

Analogous genus

Subordinate genus Human age Season of the year

Analogous species Youth Spring

The higher nodes become classemes or contextual selections of the lower nodes. One can see that the analogy Aristotle perceived between *draw off* and *cut* functions when the act of drawing off is considered under the category of Passivity; but if it is considered under the category of Possession, drawing off becomes analogous to other processes of acquisition and not to processes of deprivation ("take away"). Henceforth, there is the possibility of searching through the categorical index ad infinitum, and of uncovering a reserve of untapped metaphors, and of metaphorical propositions and arguments.

Tesauro's model still represents the framework of medieval Neoplatonism—which it has deliberately resolved, though, into a network of units of purely cultural content. It is, however announcing the model of *unlimited semiosis*. While being a (still too) hierarchical system of semes, it produces a web of interpretants.

9.3 Vico and the cultural conditions of invention

An overview of the history of metaphorology and of its epistemic breaks, however brief, must not leave out Vico, if at all because of the fact that *La Scienza nuova* (and its chapter "Della logica poetica") seems to put in question the existence of a cultural network, of semantic fields and universes, and of a preestablished process of semiosis, which should precede (on the basis of the foregoing observations) the production and interpretation of metaphors.

Certainly, Vico discusses the "first tropes," and the phenomenon of speaking by means of animate substances, whereby natural objects and phenomena are named by reference to parts of the body (Vico 1968:129), for example, the eyes of needles, the lips of a vase, etc. Now, much too much has been said about this "auroral" moment of language; in the view of some interpreters, Vico argues that the creating of metaphors is an inborn ability in beings who are at the dawn or awakening of their own intelligence; metaphorical speech, furthermore, would be iconic, insofar as it instituted a kind of native onomatopoeic relation between words and things. But the fact is, Vico knows and says that, outside of the utopia of an Adamic language (an idea already in Dante, and later elaborated in seventeenth-century England, as well as in Vico's own time), what is indisputable is the diversity of languages. In fact,

as the peoples have certainly by diversity of climates acquired different
natures, from which have sprung as many different customs, so from their
different natures and customs as many different languages have arisen. For
by virtue of the aforesaid diversity of their natures they have regarded the
same utilities or necessities of human life from different points of view, and
there have thus arisen so many national customs, for the most part differing
from one another and at time contrary to one another; so and not otherwise
there have arisen as many different languages as there are nations [Vico
1968:148].

Given which, evidently, Vico makes the following fundamental observa-
tions: Languages, like customs, are born as the response of groups of
human beings to the material environment in which they live; even if the
disposition toward language functions and develops in all human societies
according to the same logic, and even if the utilities and necessities of life
are the same for everybody, nevertheless, human societies have looked at
these material universals from different viewpoints, which is to say they
have made pertinent different aspects of their universe.

Catachreses are created out of transpositions of natural objects “accord-
ing to their natural properties or sensible effects” (Vico 1968:147); in this
sense the labor of metaphor is always motivated. What must be asked here
is if those effects and properties—given that metaphors are the result of a
selection of pertinent aspects—are not already cultural constructions. If
metaphors require an underlying cultural framework, then the hiero-
glyphic language of the gods cannot be a merely primitive stage of human
consciousness: It needs the presence of both the symbolic language of
heroes and the epistolary language of men as its starting point. Thus Vico is
not speaking of a linear development from a metaphorical language to a
more conventional language, but of a continual, cyclical activity.

The language of the gods is a heap of unrelated synecdoches and
metonymies: thirty thousand gods as identified by Varro, as many as the
Greeks counted, including stones, fountains, reefs, brooks, minute
objects, signifiers of forces, causes, connections. The language of heroes
already creates metaphors (which thus are not so primeval), but the meta-
phor or catachresis invents a new term using at least two terms that are
already known (and expressed) and presupposing at least another one that
is unexpressed. Could that symbolic language establish itself without the
support of an epistolary language, the only language recognizedly conven-
tional? On this point Vico is very explicit:

To enter now upon the extremely difficult [question of the] way in which
these three kinds of languages and letters were formed, we must establish
this principle: that as gods, heroes, and men began at the same time (for they
were, after all, men who imagined the gods and believed their own heroic
nature to be a mixture of the divine and human natures), so these three lan-
guages began at the same time, each having its letters, which developed along
with it [Vico 1968:149].

In light of these considerations, Vico’s semiotic resembles, more than an
aesthetics of ineffable creativity, a cultural anthropology that recognizes
the categorical indices on which metaphors are based, indices whose his-
torical conditions, birth, and variety it researches even as it explores the
variety of brave deeds, of medallions, and of fables.
10. THE LIMITS OF FORMALIZATION
At this point we cannot ignore the fact that formal semantics, in the effort
to transform itself into a logic of natural languages, has recently made
several important strides toward reducing the scandal of the metaphor;
that is, formal semantics has sought to expand a logic of truth conditions so
as to recognize the legitimacy of metaphorical expressions—expressions
that speak about the world by lying. What we want to suggest here is that,
at most, a formal semantics can define the place that a metaphorical calcu-
lus might occupy within its framework—yet again, it does not explain
what it means to understand a metaphor.

Take one conjecture, among the many, which is perhaps the most recent
of the efforts to formalize the phenomenon. The model put forth is
intended "to reflect the context-sensitivity of the metaphor, and [to give a]
metaphorical interpretation to statements which may be literally true and
nondeviant" (Bergmann 1979:225). A vocabulary is proposed that is out-
fitted with monadic predicates $P_1$, $P_2$, with a dyadic predicate =, with
individual constants $a_1$, $a_2$, with individual variables $v_1$, $v_2$, and with nor-
mal logical connectives. Grammatical rules are provided (of the type: if $t_1$, $t_2$ are terms, then $t_1 = t_2$ is a formula), and a class of "ideal contexts" $C$ is
added to the semantics of this language $L$.

Let $D$ be a non-empty class; it is the domain of discourse and is assumed to be
comprised of possible (actual and non-actual) individuals. An interpretation
function assigns to every monadic predicate of $L$ a subset of $D$, and to every
constant an element of $D$. Let $F$ be the class of all interpretation functions on
$D$. Choose some element of $F$ as the literal interpretation function—it assigns
to the monadic predicates and constants of the language their literal inter-
pretations. Call this function $f^0$. Let $F^0$ be the class of all interpretation functions
in $F$ which agree with $f^0$ in the values assigned to the constants. Let $g$ be the
metaphorical disambiguating function: it assigns to every $c \in C$ a member of
$F^0 - \{f^0\}$. The idea here is that $g$ tells us, for each ideal context, what the
metaphorical interpretations of predicates in that context are. Finally, let a
model for $L$ be the 5-tuple $M = \langle D, C, f^0, f^0, g \rangle$ (Bergmann 1979:226).

Obviously, this definition does not say anything about metaphors. In
effect it does not at all pretend to say anything: The author is not interested
in understanding how metaphors function, but rather (once it has been
intuitively accepted that in natural languages metaphors are easily pro-
duced and understood) she is interested in introducing this phenomenon
into the formal representation of a natural language. True, the author her-
self warns that, at least, the model she proposes permits her better to con-
sider certain questions and to formulate such in a manner that is formally
acceptable. For example, what must be understood by literal paraphrasi-
bility; whether metaphorical interpretations depend on those that are
literal, and whether every linguistic expression is interpretable metaphor-
ically in some context, or in every context, etc. But these are questions the
answers to which are not given (at least for the time being) by formal
semantics: "without an ideal context there are no strict rules for interpreta-
tion of metaphors" (1979:228). Which is what metaphorology already
knew; it is important, however, that the several formal semantics become
aware of this.
There are formal approaches, of course, that by virtue of their taking into consideration the contributions of linguistics, lexicology, and of semiotics in general allow their (tendential) preoccupations with concreteness to show through to a greater degree. In the meantime, though, it is to studies of this sort that the distinction is owed between what could be called an intensional metaphor, and one that is extensional. An example of the first type is /The girl is a birch/, which, given certain meaning postulates (e.g., if young girl then human; if reed then nonhuman), clearly manifests its metaphoricality (otherwise it would be a semantically incorrect expression, or an outright lie). An example of the second type is /the emperor entered/, an expression which in itself is literal and, semantically speaking, unambiguous, unless it should refer in a particular circumstance to the entrance of an office manager. This example would occur only in an absurd universe in which metaphors appeared only in expressions isolated from their context, and where only one semantic system were engaged, that of verbal language, that is, such a situation verifies itself only in books of linguistics and in books of formal semantics. In fact, a sentence of that sort is usually uttered: (a) in a context in which it has already been said or will immediately be said that the office manager is entering; (b) while one is showing an image of the office manager as he is entering; (c) while indicating a person whom anyone recognizes as the office manager and, in any case, as someone who is not an emperor. All of which means, that, the isolated expression having been put into contact with the linguistic context and the elements of extralinguistic systems, it would immediately be retranslated as: /The office manager [who is] the emperor is entering/ (given that there is not a question here of information de dicto: the office manager, whom we call the emperor, is entering). At this point the second example falls into the category of the first: the girl is not a birch, just as the office manager is not the emperor (cf., for all these cases of mentioning and referring, Eco 1976, 3.3.).

Teun van Dijk admits that "only a fragment of a serious theory of metaphor can be covered by the formal semantics approach [. . . ] A formal semantics specifies the conditions under which [. . . ] metaphoric sentences may be said to have a truth-value" (van Dijk 1975:173). And he makes clear that a formal semantics with such ambitions cannot but be sortal, that is to say, it must be a semantics that accounts for "selection restrictions" (e.g., if /automobile/ has the seme "mechanical" or "inorganic" and /to eat/ has semes like "human" and "the object is organic," then it is semantically deviant to say, /John ate the automobile/; if /to eat/ has a seme "human" one will not be able to say /The automobile ate up the road/; that is, it will be necessary to admit that this sortal deviation has metaphorical intentions). Hence the difference between expressions that are sortally incorrect, (such as /The square root of Susy is happiness/, whose very negation is false), and which do not seem to have any possible metaphorical interpretation (naturally that is not true, since it depends on the context), expressions that are sortally incorrect but with a possible metaphorical interpretation (/The sun smiled high up in the sky/), and expressions that are sortally correct and that can, in particular situations of referring, be metaphorical (/The emperor is entering/). A sortal specification would then be a function that assigns to each predicate of the
language a "region of logical space."

It seems that such a region, which a formal semantics identifies as an abstract and "empty" entity, once filled up cannot be anything other than a portion of Tesauro's categorical index. Given that this region would be populated by "points," "possible individuals," or "possible objects," the problem of metaphor would entail the question of the similarities and differences between these objects. Right, but not enough. Naturally the theory is not as dumb as it seems: within its framework it is possible to give a formal definition, once differences and similarities have been granted, of the greater or lesser distance between the metaphorizing and metaphorized terms. /The horse growls/ is less daring a metaphor than /The theory of relativity growls/, because in the play of related properties there is undoubtedly more of a relation between a growl and the "animal" property of a horse than there is between a growl and the "abstract object" property of the Einsteinian theory. But this useful definition of distance cannot be of service in deciding which of the two metaphors is better. All the more so, in view of the fact that at the end the author (who knows more about metaphors than the method he chooses in his article allows him) finishes by admitting that "the choice of typical criteria for the similarity function is pragmatically determined on the basis of cultural knowledge and beliefs" (Van Dijk 1975:191).

No greater satisfaction is given by another attempt at formalization, by a logician who takes off right from Aristotle, Guenthner: 'If metaphors are to be analyzed within the framework of formal semantics, the first thing will obviously be to provide for a way of implementing information about the meaning structure of predicates which is relevant for their metaphorical behavior" (Guenthner 1975:205). But immediately he says that it will not be necessary, however, to construct this semantic information in the form of an encyclopedia, and a few sortal specifications will be enough. Which is exactly the way to preclude an understanding of a trope. Such is the case that, when he analyzes some examples borrowed from Group \( \omega \), Guenthner rediscovers the same old relation of girl-birch. And as we will see, the fact that a girl and a birch-tree are both flexible is properly an item of encyclopedic information. At any rate, Guenthner's model (useless for understanding how a metaphor functions) seems more useful than the others for expanding a formal semantics of natural languages. Its author starts in fact from a distinction between natural kinds (fish, lion, etc.), opposing these against nonnatural kinds (such as /president/), and plays on the fact that the properties of a natural kind must be contextually selected (obviously on the basis of the context) in order to make the metaphor acceptable and comprehensible. A sortal model is a 4-tuple \( M = \langle D, f, k, s \rangle \) such that \( D \) is a nonempty domain of objects, or a universe of discourse, \( f \) a function of interpretation, \( k \) a function that assigns to every object in \( D \) the kinds to which the object belongs in the model, and \( s \) is a function drawn from the group of those predicates not assigned as natural kinds by \( k \). A sortal model determines which statements are true, false or meaningless (i.e., literally nonsignificant).

If we now add a function \( p \) which assigns to each predicate \( P \) in \( L \) a set of 'prominent' properties, a sortal model accounts for the metaphorical meaning
of an expression in roughly the following way. If a sentence $\theta$ is neither true nor false in $M$ and if $\theta$ translates for example the English sentence: *John is a mule* ($\theta = \text{Ex}(x = j \& Mx)$ or $Mj$) then $\theta$ can be interpreted metaphorically if there is a ‘prominent’ property assigned to $M$ such that that property holds true of John. (Note that in our culture such properties are usually rather well delimited, but never related to the basic meaning of the expression – this can be easily tested in translating metaphorical sentences from one natural language to another.) [Guenthner 1975:217]

Because entities such as the prominent properties, and every other possible insertion into the sortal apparatus, cannot be accounted for by a formal semantics, the present inspection of this universe of discourse must stop here. And we have to go back, as we said above, to a componential semantics.

11. COMPONENTENTIAL REPRESENTATION
AND PRAGMATICS OF THE TEXT

11.1 A model by "cases"

We can venture at this point an explanation of the metaphorical mechanism that (1) is founded on a componential semantics in the form of an encyclopedia; and (2) takes into account, at the same time, rules for contextual insertion. An encyclopedic semantics is undoubtedly more interesting than a dictionary. The format of a dictionary, we have seen, permits us to understand the mechanism of synecdoche, but not that of metaphor. We only have to look at the efforts made by transformational grammar and interpretive semantics approaches [see Levin 1977], for a synthetic account). Establishing that a transference or transfer of properties occurs in the expression /She is a birch/, whereby a girl would acquire the seme "vegetal" or birch the seme "human," tells us very little about what happens in the interpretation and production of that trope. In fact, if we try to paraphrase the result ("This girl is human but also has a vegetal property") we see that is is not very far from being a parody of itself. The issue here is obviously one of flexibility (but again: a birch-tree is not flexible in the same way that a young girl is [. . .]), and it cannot be considered within a semantics in the format of a dictionary.

A componential representation in the form of an encyclopedia, however, is potentially infinite and assumes the form of Model "Q" [Eco 1976] – that is to say, of a polydimensional network of properties, in which some properties are the interpretants of others. In the absence of such a network, none of these properties can attain the rank of being a metalinguistic construction or a unit belonging to a privileged set of semantic universals. In a model dominated by the concept of unlimited semiosis, every sign (linguistic and non-) is defined by other signs (linguistic and non-), which in turn becomes terms to be defined by other terms assumed as interpretants. With the advantage that an encyclopedic representation (even if ideal), based on the principle of unlimited interpretation, is capable of explaining in purely semiotic terms the concept of “similarity” between properties.

By similarity between two semes or semantic properties we mean the
fact that in a given system of content those properties are named by the same interpretant, whether it be verbal or not, and independently of the fact that the objects or things for the designation of which that interpretant is customarily used may manifest perceptual "similarities." In other words, the teeth of the maiden in the Song of Solomon are like the sheep if and only if in that given culture the interpretant /white/ is used to designate both the color of teeth and that of sheep's fleece.

But metaphors set up not only similarities, but also oppositions. A cup and a shield are alike in their form (round and concave) but opposite in their function (peace vs. war), just as Ares and Dionysus are alike insofar as they are gods, but opposite with regard to the ends they pursue and to the instruments they use. To account for these phenomena, an encyclopedic representation has to assume the form of a case grammar, which should recognize therefore the Subject Agent, the Object on whom the agent executes his action, the Counter Agent who may possibly have opposed himself to that action, the Instrument used by the agent, the Goal of the action, etc. A semantics of this type has been elaborated by various authors (cf. Greimas's and Tesnières's "actants," Fillmore's grammatical "cases," Bierwisch's semantics). At this point one should remark that all the properties that a case-like representation associates with a given action display a metonymical character.

11.2 Metonymy
From this perspective metonymy becomes the substitution of a sememe with one of its semes (e.g., /Drink a bottle/ for "drink wine," because a bottle will be registered among the final destinations of wine) or of a seme with the sememe to which it belongs (e.g., /Weep thou, O Jerusalem/ for "May the tribe of Israel weep," because among the encyclopedic properties of Jerusalem must be included that of its being the holy city of the Jews).

This type of metonymical substitution is no different from the process Freud called "displacement." And just as condensation is involved with the process of displacement, so is metaphor involved (as we will see) with these metonymical exchanges.

On the basis of a representation by cases, I attempted to show (1976) the mechanism of displacement from seme to sememe (and vice versa) by analyzing a line from Vergil: "Vulnera dirigere et calamos armare veneno" [Aeneid, X, 1. 140].

The verse, which can be translated either as "to distribute wounds with poisoned arrows" or as "to smear with poison the arrows and hurl them," plays on the fact that /vulnera dirigere/ stand for "dirigere tela" (or dirigere ictus, dirigere plagas, vulnerare). Let us suppose that "vulnerare" is the right interpretation and imagine a semantic representation in case grammar form like the following:

/Vulnerare/- (Entailments) Action "Human = Human "Weapon "Wound [Vulnus]
Strike
Wound
With aim

Here is where the expression /aim the wounds/ appears as a metonymy in
place of "to wound," given that it takes the Goal for the whole Action, or, in other words, that a seme stands for the entire sememe. Of the same type would be the Aristotelian example of /to stand/ for "to lie at anchor": standing still would appear in the representation as the Goal of anchoring. The opposite case (sememe for seme) would be to describe a parked car as being firmly anchored. An encyclopedic representation of /to stop/ would have to include even an anchor among its various instruments.

This type of representation seems to work for verbs but poses some problems for nouns. How can an Agent, an Object, or an Instrument, in fact, be found for such expressions as /house/, /sea/, /tree/? One possible suggestion would be to understand all substantives as reified verbs or actions: not /house/, then, but /to build a house/. But there is one type of representation that seems to substitute for this difficult translation of substantives into verbs, which permits seeing the object expressed by the substantive as the result of a productive action entailing an agent or Cause, a Material to be manipulated, a Form to be imposed, and a Goal or Purpose to direct the object toward. It is a representation based on nothing other than the four Aristotelian causes (efficient, formal, material, and final), it being clear that these are assumed in terms that are merely operational and without metaphysical connotations.

Here, in the meantime, is the representation of a noun /x/, which might take the following format:

```
x/ —  *=Perceptual  *=Who or what *=What x is  *=What x is supposed
aspect of x  produces x  made of  to do or to serve for
```

Such a representation takes into account only encyclopedic properties, without distinguishing between Σ and Π properties. We shall see in 11.3 how these properties, potentially infinite, must be selected according to co-textual clues.

Each property can, however, be appointed as an Σ property. Suppose that /x/ is to be considered from the point of view of its Purpose. It will be seen as belonging to the class of all the entities having the same Purpose or function. In this case one of the P properties will become the genus of which the sememe "x" is a species, that is, one of the P properties will become the upper node of a possible Porphyry's tree:

```
Σ

Π

P

/x/ — F, A, M . . .
```

The same operation can be implemented upon F, M or A properties. A property's assumption of the Σ mode thus depends on a contextual decision on the part of the interpreter (or the producer) of the metaphor, who is interested in singling out a given property as the one from whose point of view a generalizing or particularizing synecdoche in Σ can be set forth. Thus /x/ will name all the "P," or /P/ will name "x." Supposing that /x/ corresponds to /house/ and that it is represented, for the sake of economy, as

```
/house/ — with roof  ^culture  ^bricks  ^shelter
```
if one decides to consider a house from the point of view of its function, the property of being a shelter becomes an $\Sigma$ property, and it will then be possible to name a house as a shelter, or every shelter as a house. The same would happen if the house were described from the point of view of its shape: one can name a house as one's own roof.

It is worth noticing that house for shelter (and vice versa) traditionally has been considered a case of metonymy (object for function and vice versa), while house for roof or vice versa has been traditionally considered a case of synecdoche ($\text{pars pro toto}$, a synecdoche in $\Pi$).

This difference, between metonymy and synecdoche in $\Pi$, becomes absolutely irrelevant in the present framework. The only case of synecdochic movement seems to be in the $\Sigma$ mode, produced by a co-textual decision, and consisting in the transformation of a property into a genus. All the other cases of substitution of a sememe with a seme and vice versa can be called metonymy. Naturally in our framework the difference between synecdoche and metonymy has nothing to do with the concrete relations between a "thing" and its parts or other contiguous "things": The difference lies purely within formal bases.

As a matter of fact, the traditional rhetoric has never satisfactorily explained why a substitution genus/species ($\Sigma$) and a substitution pars/totum ($\Pi$) are both synecdoches, while all the other kinds of substitution (object/purpose, container/content, cause/effect, material/object, and so on) are called metonymies. In the present framework both a $\text{pars pro toto}$ and a cause/effect substitution can work on $\Pi$ properties.

The explanation of this ambiguity in the tradition must be made in historical and phenomenological terms. According to many time-honored theories of knowledge, things are first perceived and recognized according to their formal (morphologic) characteristics: A body is round or heavy, a sound is loud or deep, a tactile sensation is hot or rough, and so on. These morphological properties in our model are recorded under $F$. Instead, always according to traditional theories of knowledge, to establish that a thing has a cause A, that it is made of a certain material M, or that it has a function P, seems to depend on further inferences—by a sort of shifting from a simple act of apprehension to an act of judgment. It is evident, then, why $F$ properties enjoyed a privileged status and were ranked as synecdoches along with the $\Sigma$ relations (genus/species). To perceive and to recognize the formal characteristics of a thing meant to grasp its "universal" essence, to recognize that thing as the individual of a species related to a genus.

Obviously such an assumption does not capture the complexity of a perceptual experience, where frequently an object, to be recognized and classified, requires a complex inferential labor, dealing with its functional, material and causal aspects, as well. Our model eliminates the effects of all these implicit philosophical assumptions. All properties must be considered encyclopedic and must allow for metonymical substitution—except when a property is transformed into a genus (substitution in $\Sigma$) because for co-textual reasons a given semantic item has to be considered under a certain "generic" description (see also Eco 1979, 8.5.2.).
11.3 "Topic," "frames," isotopies
Naturally an encyclopedic representation is potentially infinite. In a given culture a cup's functions can be many, and, of these, holding liquid is only one. (One has only to think of the liturgical functions of a chalice, or of cups in sports.) What then are the interpretants that will have to be registered under the aspect P [purpose or function] of the cup? And which will be those grouped under F, A, M? If they are not infinite, they are at least indefinite. As I have written elsewhere, "a semiotics of the code is an operational device in the service of a semiotics of sign production. A semiotics of the code can be established—if only partially—when the existence of a message postulates it as an explanatory condition. Semiotics must proceed to isolate structures as if a definitive general structure existed: but to be able to do this one must assume that this global structure is a simply regulative hypothesis." (Eco 1976, 2.13). In other words, the universe of the encyclopedia is so vast (if the hypothesis of infinite interpretation from sign to sign and thus of unlimited semiosis is valid) that in the instance (and under the pressure) of a certain context, a given portion of the encyclopedia is activated and proposed to explain the metonymical substitutions and their metaphorical results (see Eco 1979, 2.6).

Where does this contextual pressure come from? Either (a) from the identification of a theme or topic, and consequently, from the selection of a path of interpretation or isotopy; or (b) from the reference to frames, which permit us to establish not only what is being talked about, but also under what profile, to what ends, and with what in view, it is being talked about (see Eco 1979, 0.6.3).

11.4 Trivial metaphors and "open" metaphors
Let us take two elementary, even crude examples, two Icelandic riddles (kenningar) mentioned by Borges (1953): /The tree for sitting/ or "bench," and /The house of the birds/ or "the sky." In the former example, the first term (/tree/) contains no ambiguity. Let us construct a componential spectrum:

/Tree/ →  "Trunk  "Nature  "Natural  "Fruits
Branches  wood . . .
 [Vertical]

As is clear in this first stage, we do not yet know which are the semes that must be kept in mind contextually. The encyclopedia [a potential reserve of information] would permit filling in this representation indefinitely. But the context also gives the indication /for sitting/. The expression as a whole is ambiguous. One does not sit on trees, or alternatively, one can sit on every branch of every tree, but then it is hard to understand why the definite article /the/ is used [which, according to Brooke-Rose, is an indicator of metaphorical usage]. This tree, then, is not a tree. Something must be found that has some of a tree's properties, but not others, obliging the tree to have properties that it does not have (normally). We are faced with a task of abduction [a kenning is a riddle based on a "difficult" metaphor]. A series of hypotheses leads us to single out in the tree-trunk the element of "verticality," so as to look for something that is also wooden but "horizontal." We try a representation of /to sit/. We look among those
Objects on which an Agent sits for those that have the same of "horizontal." A primitive Icelander, or someone who knows that the expression must bear a relation with the code of primitive Icelandic culture, immediately picks out the bench. We assemble the representation of /bench/:

/Bench/ → ³Horizontal ⁴Culture ⁴Worked ⁷To seat oneself timber

At first glance, the two sememes have no property in common. Now we carry out a second operation. We look for those among the different properties that can form part of one same Porphyry's tree. For example:

```
Vegetal entities

Wood  Timber  Others

Worked timber  Unworked timber

Tree  Bench
```

Here we see tree and bench unified at a high node of the tree (both things are vegetal), and opposed at lower nodes. This solution creates a condensation by means of a series of displacements. Cognitively speaking, not much is learned, except for the fact that benches are made of crafted timber.

Let us pass to the second riddle, /The house of the birds/. Here it is possible to assemble a double representation immediately:

/House/ → ⁷Rectangular ⁴Culture ⁴Earth ⁰Shelter

Closed  Covered

(Immortal)  Resting on ground

/Birds/ → ⁷Winged ⁴Nature ⁴Earth

etc.  (Organic)  (Flying in the sky

Obviously, certain semes have already been identified as the most pertinent here, on the basis of a series of hypotheses. The materials have been characterized according to a logic of the elements (earth, air, water and fire), and an interesting difference has been found, at this point, between the earthliness or earth-bound property of houses and the air-borne nature of birds (suggesting the seme "sky"). These are mere hypotheses (since many other alternatives exist); but it is a fact that this metaphor is more "difficult" than the other, and thus, that it requires more daring abductions. So the interpreter can make a "fair guess" out of the opposition between a house (closed) and the sky (open). At this point we can try to represent /sky/, keeping in mind, obviously, its possible differences and similarities with house:

/Sky/ → ⁷Formless ⁴Nature ⁴Air ⁰Nonshelter

Open

Clearly, among the ends or functions of sky, only "nonshelter" has been identified, since the seme "shelter" exists in /house/. At this point, though, it seems as though all the semes in the comparison house/sky are in oppo-
sition. What is there that is similar? If we try a Porphyry's tree on the opposition air/earth we discover that these two units find a common node in the property "element."

The interpreter is led, then, to draw inferences concerning those semes that have been singled out. He is led, in other words, to take the various semes as the starting points for new semantic representations or compositional analyses (see Eco 1976, 2.12). The domain of the encyclopedia is widened: What is the territory of men and what is the territory of birds? Men live in closed (or enclosed) territories, and birds in open territories. What for man is something from which he must shelter himself is the natural shelter for birds. New Porphyry's trees are tried out: closed dwelling or territory vs. open dwelling or territory. Birds "live," so to speak, in the skies. It is this "so to speak" that creates the condensation. Frames or settings are superimposed: If a man is menaced what does he do? He takes refuge in his house. If a bird is menaced, it takes refuge in the skies. Therefore, enclosed refuge vs. open refuge. But then the skies that seemed a place of danger (producing wind, rain, storm) for some beings become a place of refuge for others. This is a case, then, of a metaphor that is "good" or "poetic" or "difficult" or "open," since it is possible here to continue the process of semiosis indefinitely and to find conjunctions or contiguities at one node of a given Porphyry's tree and dissimilarities at lower nodes, just as an entire slew of dissimilarities and oppositions are found in the encyclopedia semes. That metaphor is "good" which does not allow the work of interpretation to grind to a halt (as occurred with the example of the bench), but which permits inspections that are diverse, complementary and contradictory. This does not appear to be different from the criterion of pleasure cited by Freud (1905) to define a good joke: thrift and economy, to be sure, but such that a short-cut is traced through the encyclopedic network, a labyrinth which would take away too much time if it were to be explored in all its polydimensional complexity.

The problem now is to see whether this model of metaphorical production and interpretation holds true for other metaphorical expressions, for the most exaggerated catachreses and for the most delicate poetic inventions alike. We will start by putting ourselves in the position of someone who has to disambiguate /The leg of the table/ for the first time. In the beginning, it must have been a kenning, an enigma. One must know first, though, what a table and a leg are. One finds in a (human) leg a function P of sustaining or holding up a body. In the formal description F of /table/ one finds the instruction that it is held up by four unnamed elements. One hypothesizes a third term, /body/, and finds that in F it is held up by two legs. The semes for verticality may be found both in leg and in the object x holding up the table. One also finds differences and oppositions between semes, such as "nature vs. culture," "organic vs. inorganic." Table and body are joined under a Porphyry's tree that considers "articulated structures": we find that body and table meet at the higher node and are distinguished from each other at the lower nodes (e.g., organic articulated structures vs. inorganic articulated structures). In the end, we might well ask if the catachresis is "good." We do not know, it is too familiar, we will never again regain the innocence of first invention. By now it is a ready-made syn-
tagm, an element in the code, a catachresis in the strict sense, and not an inventive metaphor.

Let us try out, then, two indisputably genuine metaphors: /She was a rose/, and from Malherbe, /Et rose elle a vécu ce que vivent les roses, l'espace d'un matin/.

The first metaphor right away says contextually what the metaphorizing term (or vehicle) is and who the metaphorized term (or tenor) is. /She/ cannot be anything other than a human being of the female sex. One proceeds thus to the comparison of /woman/ and /rose/. But the operation can never be so completely ingenuous. The interpreter's intertextual competence is already rich with ready-made expressions, with already familiar frames. One already knows which semes to bring into focus and which to drop:

```
<table>
<thead>
<tr>
<th>Organic</th>
<th>Vegetal</th>
</tr>
</thead>
<tbody>
<tr>
<td>/Rose/</td>
<td>→</td>
</tr>
<tr>
<td>Freshness</td>
<td></td>
</tr>
</tbody>
</table>
```

```
<table>
<thead>
<tr>
<th>Color</th>
<th>Nature</th>
<th>Vegetal</th>
<th>Gratia sui</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>N</td>
<td>M</td>
<td>Pé</td>
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The comparison is of unsettling simplicity. The greater part of the encyclopedic semes is similar; there is opposition only on the vegetal/animal axis. The Porphyry's tree is built on that opposition, and we find that, despite opposition at the lower nodes, there is a conjunction at the higher node (organic). But in order to arrive there it was necessary, obviously, to know already that when a woman is compared to a flower it is in terms of a woman-object, which, like the flowers, lives for its own sake, purely as an ornament to the world. And finally the question of the similarity or dissimilarity between properties becomes clear: it is neither perceptual nor ontological, but rather, semiotic. Language (the figurative tradition) must already have understood "freshness" and "color" as interpretants both of the healthy condition of a human body and of the healthy condition of a flower, even if from a physical perspective the rosiness of a woman's cheek rarely has the same spectral frequency as the red color of a flower. There is a difference in millimicrons, but culture has blurred the distinction, naming two shades of color with the same word or representing them visually with the same pigment.

This is a poor metaphor, then, "closed," scarcely cognitive, saying something that is already known. However, no metaphor is absolutely "closed": its closure is pragmatic. If we imagine an ingenuous user of language who encounters /she is a rose/ for the first time, we will see him caught in a game of trial and error, like the person who were to disambiguate for the first time /The house of the birds/. There is no metaphor that is absolutely unpoetic; such metaphors exist only in particular sociocultural situations. As for absolutely poetic metaphors, it is impossible to say how much a user knows of a language (or of every other semiotic system). What is known, however, is what a language has already said, and it is possible to recognize a metaphor that demands unprecedented interpretive operations, and
the identification of semes not yet identified.

Malherbe's metaphor apparently demands the same work of comparison as did the preceding example. The problem of /space/ is already resolved: tradition has already made it a metaphor of the "passage of time." Tradition has already secured the metaphorical use of /life/ for the "duration" of non-animal entities. The relations between "duration," "young girl," "rose," and "morning" must be inspected, then. The seme of "fleetingness" (already intertextually codified) will be recognized as particularly pertinent to /rose/ (the rose opens at dawn and closes at sunset; it lasts for a very short time). All the other similarities between girl and rose will already have been reviewed and taken as intertextually correct. As far as morning is concerned, it has the property of being the most beautiful, delicate, and active hour of the day. Naturally, then, a maiden, fair as a rose, has lived a fleeting life, and has lived only that part of it that, albeit brief, is the best (Aristotle moreover had already said: the morning of life is youth). Thus, we find identity and dissimilarity between encyclopedic markers, conjunction at a high node of the Porphyry's tree (organic, or living) and differences at the low nodes (animal vs. vegetal). Thenceforth, all the condensations in this example, of maiden and flower, of vegetal life-pulse becoming carnal life-pulse, of dew turning into moist eyes, of petals assuming the shape of mouths, follow; the encyclopedia allows the imagination (even the visual) to gallop ahead, and the continuous web of semiosis becomes animate with alliances and incompatibilities. But some ambiguities remain. The rose lives one morning and it closes at night, but only to see the light again the next day. The maiden dies, instead, and is not reborn. Must one review then what is known about death for human beings? Is there rebirth? Or must one review what is known about the death of flowers? Is the rose that is reborn tomorrow the same as yesterday's or is yesterday's that which was not picked? The effect of the condensation is unstable; underneath the cadaveral stiffening of the maiden the long pulsation of the rose continues. Who wins? The life of the rose or the death of the maiden? Obviously there is no answer: the metaphor is, in point of fact, open— even if it is sustained by a play of intertextually familiar overcodings that verges on the manneristic.

11.5 Five rules

We are now in a position to sketch a series of rules for the co-textual interpretation of a metaphor (noting that the process of interpretation maps out in reverse the process of production):

1. Try to provide a first tentative and partial componential representation of the metaphorizing sememe or sememes (the vehicle). This representation must single out only those semes or properties that the co-text has suggested as relevant (see Eco 1979; 0.6.2, for the process of blowing up and narcotizing properties). This operation represents a first abductive attempt.

2. Look abductively in the encyclopedia for some other sememe that possibly shares some of the focused properties of the first sememe(s), while displaying other interestingly different properties. This new sememe becomes a plausible candidate for the role of metaphorized sememe (tenor). If there are competing terms for this role, make further abductions based upon co-
textual clues. It must be clear that by "identical properties" we mean those representable by the same interpretant. By "interestingly different properties" we mean those that are representable by interpretants that are not only different from each other, but that can be opposed according to some overcoded incompatibility (such as open/closed, living/dead, and so on).

3. Select one or more of the mutually different properties and build on them one or more Porphyry's trees such that these oppositional couples may join at one of its upper nodes.

4. Tenor and vehicle display an interesting relationship when their mutually different properties meet at as high a node as possible in the Porphyry's tree.

Expressions such as "interestingly different" and "as high a node as possible" are not vague; they refer to a co-textual plausibility. Similarities and differences can be evaluated only according to the co-textual success of the metaphor, and we cannot look for a "formal" criterion that establishes the proper degree of difference and the proper position in a Porphyry's tree. According to these rules, we start from metonymical relations (from seme to sememe) between two different sememes, and by checking the possibility of a double synecdoche (which interests both vehicle and tenor) we finally accept the substitution of a sememe with another. Thus the sememic substitution appears as the effect of a double metonymy verified by a double synecdoche. From this point on, a fifth rule holds:

5. Check if, on the grounds of the "abduced" metaphors, new relations can be implemented, so as to enrich further the cognitive power of the trope.

11.6 From metaphors to symbolic interpretations

Once the process of unlimited semiosis has started, it is difficult to say where and when the metaphorical interpretation stops: it depends on the co-text. There are cases in which from one or more metaphors the interpreter is led to an allegorical reading, or to a symbolic interpretation, where the boundaries between metaphor, allegory and symbol can be very imprecise.

On this score, Weinrich (1976) has posited an interesting distinction between micrometaphorics, metaphorics of the context and metaphorics of the text. Let us briefly follow his analysis of a lengthy passage from Walter Benjamin, of which only the most salient points will be summarized here. In the text Seagulls (Möwen), Benjamin speaks of a trip by sea that he made, a voyage that is dense with metaphors which will not be analyzed here. Two, however, appear singular to Weinrich: the seagulls, peoples of winged creatures, winged messengers, bound in a pattern of signs, which at a moment divide into two rows, one black, vanishing westward into thin air, the other row white, pulling toward the east, still present and "to be resolved"; and the mast of the ship, which describes in the air a pendular movement. Weinrich first develops a micrometaphorics (e.g., of common and dissimilar properties between mast and pendulum), and then a metaphorics of the context, where he connects the various "metaphorical fields" activated by Benjamin. Briefly speaking, something slowly emerges that begins to look increasingly like an allegorical enunciation, which in the
final stage of the metaphorics of the text reveals its political-ideological key
(whereby the text is considered also in terms of the historical circumstances of its enunciation): the year 1929, the crisis of the Weimar Republic, the contradictory situation of the German intellectual, on one side obsessed by the extreme polarization of contrasts (friend vs. enemy), on the other uncertain about what position to take, and oscillating between neutrality and a dogmatic surrender to one of the parties. Hence the mast that becomes a metaphor for the "pendulum of historical events," and the antagonistic contrast between the seagulls.

Regardless of whether Weinrich's reading is correct or not, let us return to the metaphor of the mast-pendulum, to identify its constitutive mechanism, which must permit all the contextual inferences that the reader (in this case postulated as a Model Reader) may possibly draw. We will go right past the stage of finding those contextual pressures that lead the reader to select certain semes at the expense of others, and draw the componential spectrum of the two terms present in the context: /mast/ and /pendulum/. In effect, the text does speak of a "pendular movement" (Pendelbewegungen), so that more than of metaphor we should speak of a simile (the mast moves as though it were a pendulum). But the specific effect of condensation is not affected by this.

The representation of mast and of pendulum is as follows:

<table>
<thead>
<tr>
<th>Mast</th>
<th>Pendulum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vertical</strong></td>
<td><strong>Vertical</strong></td>
</tr>
<tr>
<td>Fixed</td>
<td>Mobile</td>
</tr>
<tr>
<td>Blocked at base</td>
<td>Blocked at top</td>
</tr>
</tbody>
</table>

We can see immediately on which semes the identity may be established and on which the difference may be based. A hasty conjunction in a given Porphyry's tree would give disappointing results: Both a mast and a pendulum are hand-crafted, both are of wood or iron, or at the very least, both belong to the class of vertical things. This is just not enough. The only oppositions worth noticing seem to be that between fixity and oscillation, and the fact that the one must be referred to intervals in space, and the other to intervals in time. At a second inspection we see that even a mast, while staying fixed, must oscillate somewhat, just as a pendulum to oscillate must be fixed at its peg. But this is still not a cognitive acquisition worth noting. A pendulum fixed at its top end oscillates and measures time, and a mast fixed at its base oscillates and in some way is bound to the dimension of space—which we already knew.

If this metaphor had appeared in a context that dropped it immediately, without taking it any further, it would not have constituted an invention worthy of emphasis. In his analysis Weinrich shows that the intertextual framework focuses the interpreter's attention on the theme of "oscillation"; moreover, within the same context, the insistence on the play of alterna-
tion among the seagulls and on the oppositions right/left and east/west establishes an isotopy of tension between two poles. This is the isotopy prevailing at the deepest levels, and not that which is established by the topic "trip by sea" at the level of discursive structures (see Eco 1979). The reader is led, then, to shift the center of semiosis to the seme of "oscillation" — which is the primary function of a pendulum and secondary for a mast (the encyclopedia must begin to acknowledge a hierarchy of semes). Moreover, the pendulum's oscillation is functionally adapted to precise measurement, while that of a mast is more casual. The pendulum oscillates in an unaltering, constant manner, without any changes of rhythm, while the mast is subject to changes, and at the worst, to fractures. The fact that the mast is functionally adapted to a ship (open to movement within space and to indefinite adventure), and that a pendulum is functionally adapted to being a time-piece, fixed in space and regular in its measurement of time, opens the way to successive oppositions. The certainty of a pendulum over against the uncertainty of a mast, the one closed and the other open . . . And then, naturally, the relation of the mast (uncertain) to the two contradictory peoples of seagulls. . . . As can be seen, our reading can go on ad infinitum. By itself, the metaphor is a poor one; set in its context it sustains other metaphors, and is by them sustained.

Others have attempted to define the value of a metaphor according to the greater or lesser distance between the properties of the terms brought into focus; it does not seem to me, though, that there is such a rigorous rule. It is the encyclopedical model constructed for the purposes of interpreting a given context that sets ad hoc the center and periphery of the relevant semes. There remains the criterion of the greater or lesser openness, that is, of how far a metaphor allows us to travel along the pathways of semiosis and to penetrate the labyrinths of the encyclopedia. In the course of such traverses, the terms in question are enriched with properties that the encyclopedia did not yet grant them.

These considerations do not yet definitively establish an aesthetic criterion for distinguishing "beautiful" metaphors from those that are "ugly." On that score, even the strict relations between expression and content and between form and substance of expression come into play (in poetry one might speak of musicality, of the possibility of memorizing both contrast and similarity, and thus such elements as rhyme, paronomasia, and assonance enter one's consideration). But these considerations do permit us to distinguish the closed (or scarcely cognitive) metaphor from that which is open, thereby enabling us to know better the possibilities of semiosis, or in other words, precisely of that categorial index of which Tesauro spoke.

12. CONCLUSIONS
No algorithm exists for metaphor, nor can a metaphor be produced by means of a computer's precise instructions, no matter what the volume of organized information to be fed in. The success of a metaphor is a function of the sociocultural format of the interpreting subjects' encyclopedia. In this perspective, metaphors are produced solely on the basis of a rich cultural framework, on the basis, that is, of a universe of content that is
already organized into networks of interpretants, which decide (semiotically) upon the identities and differences of properties. At the same time this content universe, whose format postulates itself not as rigidly hierarchized, but rather according to Model Q, alone derives from the metaphorical production and interpretation the opportunity to restructure itself into new nodes of similarity and dissimilarity.

But this situation of unlimited semiosis does not exclude the existence of first tropes, of "new" metaphors, in other words, never before heard of, or at least, experienced as though they were never before heard. The conditions of occurrence for such tropes, which we might term metaphorically "auroral" (but which in Eco 1975 are defined as instances of invention) are multiple:

a. There always exists a context that is capable of reproposing as new a codified catachresis or dead metaphor. One can imagine a text of the école du regard in which, by means of an obsessive description of our perceptual activity, the force and vividness of such an expression as /The neck of the bottle/ is rediscovered. And Mallarmé knew that there are still many ways to say /a flower . . ./.

b. In shifting from one semiotic system to another, a dead metaphor becomes an inventive one anew. Think of Modigliani's female portraits, which, it could be said, visually reinvent (but also oblige us to rethink even conceptually, and, through various mediations, verbally) an expression such as /neck of a swan/. Investigations of the visual metaphor (cf. Bonsiepe 1965) have shown how a worn-out expression like /flexible/ (used to indicate openness of mind, lack of prejudice in decision making, sticking-to-the-facts) can reclaim a certain freshness when, instead of being uttered verbally, it is translated visually through the representation of a flexible object.

c. The context with an aesthetic function always posits its own tropes as "first." Insofar as it obliges one to see them in a new manner, and arranges a quantity of correlations between the various levels of the text so as to permit an ever new interpretation of the specific expression (which never functions alone, but always interacts with some new aspect of the text; see the image of the mast/pendulum in Benjamin). Moreover, it is characteristic of contexts having an aesthetic function to produce objective correlative, which have a extremely "open" metaphorical function inasmuch as they give one to understand that relations of similarity or of identity may be postulated without the possibility of those relations being further clarified. At this point one frequently speaks of "symbol."

d. The "deadest" trope can work "like new" for the "virgin" subject, approaching for the first time the complexity of the semiosis. Both restricted and elaborate codes exist. Imagine a subject who has never heard of comparing a girl to a rose, who ignores the intertextual institutionalizations, and who responds even to the most worn-out metaphors as though discovering for the first time the relations between a woman's face and a flower. The kinds of metaphorical communication may also be explained on the same basis, the cases, namely, in which the "idiot" subject is incapable of understanding figurative language, or perceives its functions in a labored manner, experiencing it only as a bothersome provoca-
situations of the kind also arise in the translating of metaphors from one language to another: there are equal chances of a translation producing puzzling obscurity or limpid intelligibility.

e. There are privileged cases, finally, in which the subject "sees" for the first time a rose, notices its freshness, its petals pearled with dew—because previously the rose for him had only been a word, or an object espied in the windows of a florist. In such cases the subject reconstructs, so to speak, his own sememe, enriching it with properties, not all verbalized or verbalizable, some interpretable and interpreted by other visual or tactile experiences. In this process various synaesthetic phenomena compete in constituting networks of semiotic relations. These reinvented metaphors are born out of the very same reason that one tells one's own symptoms to a doctor in an improper manner (/My chest is burning...I feel pins and needles in my arms.../). In this way a metaphor is reinvented through ignorance of the lexicon, as well.

And yet, these first tropes themselves arise because every time there is an underlying semiotic network. Vico would remind us that men know how to speak like heroes because they already know how to speak like men. Even the most ingenuous metaphors are made from the detritus of other metaphors—language speaking itself, then—and the line between first and last tropes is very thin, not so much a question of semantics as of the pragmatics of interpretation. At any rate, for too long it has been thought that in order to understand metaphors it is necessary to know the code (or the encyclopedia). The truth is that metaphor is the tool that permits us to understand the encyclopedia better. This is the type of knowledge that metaphor stakes out for us.

In order to arrive at this conclusion, we had to give up looking for a synthetic, immediate, blazing definition of metaphor: substitution, leap, abbreviated simile, analogy.... Because the way in which one seems to understand a metaphor is simple, it is easy to be deluded into thinking that metaphor is capable of being defined by means of a simple category. This simplicity, it must be noted, this felicitousness in making short-cuts within the process of semiosis, is a neurological fact. Semiotically speaking, instead, the process of metaphorical production and interpretation is long and tortuous. It is not at all a given that the explanation of the immediate physiological or psychical processes must be equally immediate. In his collection of classical Witze, Freud quotes this anecdote of Lichtenberg: "He marveled that cats should have two slits in their skin, just where their eyes are." And Freud comments: "The stupefaction exhibited here is only apparent; in reality this simplistic observation conceals within it the great problem of teleology in the structure of animals. That the flap of the eyelid should open where the cornea is exposed is not at all obvious, at least not until the history of evolution has made clear for us this coincidence" (1905). Behind the "felicitousness" of natural (physical and psychical) processes remains hidden a long labor. We have tried here to define some of the phases of that labor.
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