

Johannes Heinrichs

Language Theory for the Computer: Monodimensional Semantics or Multidimensional Semiotics?

Reflections on M. Th. Rolland's book „Sprachverarbeitung durch Logotechnik“ (1)



PD Dr. Johannes Heinrichs (b.1942) studied philosophy, theology, and the German Language in Munich, Bochum, Frankfurt, Paris. His doctoral dissertation (1972, Bonn) was the Hegel-Study „Die Logik der Phänomenologie des Geistes“ and his habilitation in philosophy (1975). He teaches philosophy and social ecology at several universities. He published 10 books and 50 papers in journals, also in language theory.

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Computer linguistics continues to be in need of an integrative language-theory model. Maria Theresia Rolland proposes such a model in her book „Sprachverarbeitung durch Logotechnik“ (1994). Relying upon the language theory of Leo Weisgerber, she pursues a pure „content oriented“ approach, by which she understands an approach in terms of the semantics of words. Starting from the „implications“ of word-contents, she attempts to construct a complete grammar of the German language. The reviewer begins his comments with an immanent critique, calling attention to a number of serious contradictions in Rolland's concept, among them, her refusal to take syntax into account despite its undeniably real presence. In the second part of his comments, the reviewer then takes up his own semiotic language theory published in 1981, showing that semantics is but one of four semiotic dimensions of language, the other dimensions being the sigmatic, the pragmatic and the syntactic. Without taking all four dimensions into account, no theory can offer an adequate integrative language model. Indeed, without all four dimensions, one cannot even develop an adequate grammar of German sentence construction. The fourfold semiotic model discloses as well the universally valid structures of language as the intersubjective expression of human self-awareness. Only on the basis of these universal structures, it is argued, is it possible to identify the specific structures of a native-language, and that on all four levels. This position has important consequences for the problems of computer translation and the comparative study and use of languages. (Author)

1. Major lines of Rolland's approach to language

For the diverse forms of machine-based language processing, in particular for the natural language dialog between man and computer, we still have no generally accepted model (despite intensive research) with which to describe the characteristics of a particular language. The lack of an appropriate model becomes painfully apparent in conjunction with the task of translating between different languages. Maria Theresia Rolland's monumental study proports to solve this problem, first for the German language, but indirectly also for other languages. Indeed, she claims that her study is not simply a partial contribution, but in fact the decisive break-through, a solution *almost exclusively in terms of pure semantics*, i.e. based entirely on immanent word-content, but claiming to cover every aspect of language.

Rolland develops her proposals on the basis of the language-content research of the Bonner linguist Leo Weisgerber, who sees himself in the tradition of Wilhelm von Humboldt when he asserts, that the reality accessible to a human being is constituted solely in and by his language, his or her world-view being constructed essentially along the lines of the „inner form“ of his or her native-language. Rolland's claims for her position are set out in the following.

„As the following elaborations will show, we have succeeded, on the basis of Weisgerber's (1962a: 13 ff) *content-oriented approach* (i.e. direct reference to the semantics of the language) in identifying the rules and regularities and their underlying principles, which are constitutive for the German language. Furthermore, it is shown, that these *principles* hold good for the structure of every other language, whereby, naturally, the specific concretization will vary from one language to the other, since each language has its own specific way of grasping reality“ (p. 41).

Oddly enough, despite her recognition of such „principles“ of language structure, Rolland repeatedly and vigorously rejects the existence of universal language structures (linguistic universals) or of universal grammar (p.10, 20f., 31, 257, 551f.).

After two introductory chapters with the titles „I. Topic of research“ and „II. Viewpoints“, which do nothing more than to outline the valence theory of the verb and the theory of cases, the reader comes to the central chapter of the book „III. Logo-technique“. The first part of this chapter concerns itself with word-classes (= „Wortarten“) and sentence-members (= „Satzglieder“). Here Rolland asserts, that the basic semantic rules, in accordance with which words function as the reality-defining carriers of meaning, are fixed definitively in a small and thus manageable number of *word-classes*. She identifies six such classes: verbs, substantives, adjectives, adverbs, prepositions and conjunctions. Each class, she claims, has its own typical inflection - an astonishing assertion for the grammarian. Thus the „inflection“ of the preposition is the case of the substantive it governs, the „inflection“ of the conjunction is that of the verbal or nominative sentence-members, and for the „inflection“ of the adverb the comparative form of the so-called „adjective-adverbs“ or of a few innate adverbs, e.g. „gern“, „lieber“, „am liebsten“, is called into service (p.101, 173).

The word-class to which a word belongs determines its abilities to function in a distinct way as *part of a sentence*. Rolland distinguishes six types of functional sentence-members (= „Satzglied“): predicate, subject, object, circumstantial determination, attribute, conjunctive determination. Although not identical with the word-classes, these sentence-members are set in relation to them by the authoress, though not according to any recognizable principle (see the survey on p.343). Two word-classes have only one such function: verbs function only as predicates, adjectives only as attributes. The other classes can exercise more than one function as sentence-members.

The remainder of this chapter „Logo-technique“ (III, 5-11) is devoted to the structure of word-contents (= „Wortinhalt“), moving on then to the structures of syntagmas and sentences (III, 12-13). What the authoress has in mind in this second part of the chapter is summed up in the following quotation.

„Within the patterns typical of the particular word-class, the *word-content* (= „Wortinhalt“) is constituted. Word-content is a composite of *special content*, i.e. the meaning proper to this particular word alone, and of *general content*, the meaning shared with other words of its class; such general content being subdivided along *two general lines*. Access to the meaning of a word is provided by its *implication* (= „Implikat“), i.e. the word as viewed in the context of the structure of its surroundings in the sentence, the whole of which reflects the complex specific meaning of the word. Corresponding to the two types of partial meaning, special and general, two types of partial implication are to be distinguished, complement and supplement. *Complement*, corresponding to the *special content*, is to be found in the structural constellation of *dependent introductory words and predicates* and in the *connections of substantives and adverbs*. The *supplement*, corresponding to *general content*, reveals itself according to the two lines of general meaning, the one, corresponding to the word's inflectional patterns, constituting the *inflectional group*, and the other, corresponding to its constructional patterns, constituting the *constructional group*“ (p.343).

Rolland distinguishes further the word-classes in accordance with „agreement in at least partial aspects of the complement“ and „agreement in the inflectional group“. All in all, the authoress's intention is to show that every word contains within itself (implicitly) its own individual construction plan, according to whose rules and patterns it is to be used in sentences or syntagmas. Thus verbs imply and condition sentential structures, words of the other classes imply and condition syntagmic structures.

The following chapter „IV Speech processing“ operationalizes the foregoing theory in the form of computerized lists of word meanings (p.346-549). There is no point in discussing these applications before arriving at an understanding of and agreement about the theoretical foundations.

What emerges from this wondersome construct of symmetrical relationships between word-contents, is in fact, though not perhaps in the intention of the authoress, a kind of comprehensive semantic lexicon of the German language, listing all the possible usages of a word and thus making possible „knowledge interrogation“ (=

„Wissensabfrage“) aimed at disclosing all the possible elements of information stored in the German language.

Rolland speaks of the „construction of a fully automated, natural language dialog-system“ (p.552) and sums up: „Thus the understanding of the structure of language proves to be the basis for solving problems in a wide variety of applications, from the practical uses of computer science, through the interpretation and use of language as such, on to the theoretical explanation of thinking itself (p.556).

2. Immanent Criticism: Contradictions in Rolland's Theory and Practice

The authoress herself has not hesitated to describe her efforts as epoch-making or to extoll their virtues in the best advertizing style. The reviewer, by contrast, is obligated to greater modesty. Right at the outset, let it be granted that a well worked out semantic lexicon of the German language could indeed be a meaningful and useful contribution. Such a lexicon may not confine itself to only a few, often merely idiomatic uses of a word, as is the practice in most existing dictionaries, in particular in bilingual ones. Instead, it must explicate the full panoply of possible meanings of each word, especially of the verbs. On the other hand, it does not lie in my competence to judge, whether the projected utility of such a lexicon would in fact be sufficient to justify a publicly funded effort to achieve it. Such an evaluation must also take into account a comparison with English language databases.

Quite different questions, however, must also be answered. Would such a database for the semantics of the German language be sufficiently free of dogma to be practically useful? Would such a database reflect the real structure of language? Is its grasp of linguistic structure sufficient to provide a solid foundation for the functions it proposes to fulfill, e.g. translation, linguistic comparison, stylistic analysis etc. Responding to these questions, I propose to begin with an immanent criticism of Rolland's work, measuring the claims she makes in terms of her own standards, in particular her claims to be contradiction free, solidly grounded and intersubjectively comprehensible. Only when this immanent critique is finished, will I proceed to introduce what I believe to be a more comprehensive, more coherent, and more internally consistent theory of language. However, I repeat, for emphasis: the immanent critique in the first part of this review of Rolland's work is entirely independent of the concept developed in the second part of this paper. Moreover, the accent throughout is on the theory of language as such; questions of computer programming or the utility of „machine-based“ language processing will only be touched on by way of future prospects.

a) Contradiction between sophisticated conceptual systematics and inadequate conceptual definitions

The long quotation from Rolland's text reproduced in the first section of this article may well have impressed the

reader as sounding quite meaningful; in fact, however, on closer attention it proves to be considerably less intelligible. Personally, I must confess openly, that, despite my most intensive efforts of interpretation, the whole conceptual system of the authoress remains incomprehensible. One reason for this is that the concepts she uses are almost never defined. Instead they are introduced suggestively in the course of developing a thought, thus evoking the impression of having something definite to say. In fact, however, it is this very definiteness which is lacking. What is an „implication“ distinguished according to „special content“ and „general content“? One might expect that the lengthy glossary at the end of the book would help the confused reader out of his/her predicament. Let us see! In the glossary, „complement“ is defined as „that part of the implication, with the help of which the special content can be identified“ (p.575). This definition refers us to „special content“. The glossary defines „content“ as „the intellectual side of linguistic instruments“ (p.574). This is at least a rough identification, though it is problematical, since the pragmatic element implicit in the concept „linguistic instruments“, in short the „intention“, is also an intellectual element. The frequent explanation of „content“ (= „Inhalt“) through „intellectual component“ (= „Geistiges“) is not only homely and old-fashioned, but also lop-sided and directly false. Later in this paper, I will come back to the equally „intellectual“ side of the speech act, which is studied by linguistic pragmatics; at the moment, however, it is the authoress's notion of „special content“, which is under discussion. This is defined as „a partial content, which signifies the particular component of the word's content“ (p.583). „Particular“ (= „eigenständig“) is here contrasted to „general content“, i.e. „that part of the word's content which the word shares with other members of its class“ (p.573). This much one might have figured out oneself. But has one come any closer to clarifying the notion of „complement“? And what of its pendant „supplement“, defined as „that part of the implication, with the help of which the general content can be identified“ (p.584)? Let us turn then to the crucial notion of „implication“ (= „Implikat“): „the structure underlying a particular word in a particular language, see also complement, supplement“ (p.574). This is going in circles, and one may be forgiven for thinking that the circles are vicious. When such a suspicion is substantiated in numerous, clearly defined examples and concepts, then the whole system with its often astonishing symmetries proves to be little more than a house-of-cards drawn from a deck of the authoress's own making. Such a construction can hardly be regarded as containing real knowledge about linguistic structures.

As further examples of Rolland's circular reasoning, I shall next take up her definition of „substantive“ and its corresponding sentence member and then her definitions of „adjective“ and „attribute“. With these examples, we find ourselves on a more concrete level of linguistic phenomena than that of the above constructs.

b) Contradiction between the claim to pure semantics and the actually syntactical definition of word classes

One could perhaps dismiss the preceding criticism as a formalistic critique based on divergent notions of conceptual and definitory clarity. With the notion of word-classes, by contrast, we are dealing with one of the main supporting pillars of Rolland's whole system: words belong to classes. How are „word-classes“ (= „Wortarten“) defined? She writes: „The decisive and universal criterion for the distinction of the word-classes among themselves is the function which the words of a particular class exercise as members of a sentence“ (p.56). Later, we find the following definition completing the circle: „The characteristic of the substantive is its ability to function as a direct member of a sentence, either as a *direct subject*, a *direct object* or a *direct circumstance*. The term '*direct*' means derived from a substantive...“ (p.83).

Equally circular is the definition of „adjective“ in terms of „attribute“ and „attribute“ in terms of „adjective“: „The characteristic of the word-class adjective is its ability to function as a special sentence-member, namely as an attribute“ (p.94). With this claim, the authoress has already *per definitionem (falsam)* excluded predicate adjectives and predicate nouns from the class of adjectives, treating them as adverbs, because, in German (by contrast to Latin), they happen not to be declined. In doing this, she ignores what Hans Glinz, another Weisgerber pupil (not mentioned by Rolland!) already in the 50's had claimed to identify as a characteristic of the „inner form of the German language“¹ (2). Furthermore, the circular definition of the adjective in terms of the attributive function and then of the attribute in terms of the adjectival word-class (p.95) leads the authoress to transform the genitive attribute, e.g. „Das Buch des Lehrers“ (= „the teacher's book“) into a genitive object, because this interpretation better fits the symmetry of her tables of word-classes and sentence-members.

This example reveals a whole list of typical errors: e.g. she defines the word-class „adjective“ in a way doing violence to linguistic usage and anything but „semantically“, she defines the sentence-member „attribute“ in a false and equally un-semantic manner (in fact, sentence-members can only be defined in terms of the whole of the syntactic sentence complex); in an illogical, circular manner, she defines one in terms of the other; in general, she defines word-classes through their function as sentence-members. But if there is anything which qualifies as „syntactic“, it is the definition and function of the sentence-members. Here in fully unjustified manner, they are treated as word-class implications of supposedly pure semantics.

As long as the theoretical basis of Rolland's analyses remains unexplained and ungrounded, any further study of her numerous „beautiful“ tables is pointless; these surveys are mere houses-of-cards constructed by arranging time and again the same self-made playing-cards in ever new artificial patterns arbitrarily postulated rather than empirically uncovered.

Here and there, one encounters suggestions of how word-classes can be defined semantically; indeed, in one case rather late in the book, a whole list of semantic definitions of word-classes is offered: verbs signify a „process“ (= „Process“), substantives a „something“ (= „Gegenstand“), adjectives a „condition“ (= „Zustand“), adverbs a „circumstance“ (= „Umstand“), prepositions a „relationship to“ (= „Beziehung zu“), conjunctions a „connection between“ (= „Verbindung zwischen“) (p.257). These more or less correct semantic definitions of word-classes would, however, naturally lead to quite different conclusions regarding the word-class definitions of the sentence-members. *Pars pro toto*, this can be illustrated by the example of the predicate adjective or more specifically the predicate noun. Contrary to Rolland's opinion, there really exists an adjectival, non-adverbial attribute to the predicate, as is illustrated by the assertion „Ich trinke den Kaffee schwarz“ (= „I drink coffee black“) or by the familiar hymn-verse „Der Wald steht schwarz und schweigt“ (i.e. „the forest stands black and keeps silent“). In Rolland's system, such constructions have no place; they are treated as an adverb of manner, as though the forest really „stands“ in a „black manner“ or the drinking occurs in a black manner. Such predicate attributes, like their cousins the predicate nouns, do not cease to be adjectives simply because their position in a sentence is not that of the usual substantive attribute. That such adjectival sentence-members remain adjectivistic is clearly demonstrated by the ease with which they can be transformed: the demonstrative or explanative statement „a beautiful tree!“ can easily be transformed into „This tree is beautiful!“ Such transformation through transposition is not possible, where a member of one word-class is to be replaced by a member of a different word-class.

Rolland shows no awareness of the problems with her definitions of word-class and sentence-member. As a consequence, she is unable to communicate clear understanding, contenting herself with arbitrary constructions in the guise of apparently symmetrical tables. In short, her subdivision of „word-classes“ and „word-types“ leads only to an unpalatable mixture of semantic and syntactic viewpoints contradicting her own claim to pure semantics.

Had Rolland clearly and consistently distinguished between word-class, which is defined semantically, and sentence-member, which must be defined syntactically, she need not, for example, have subsumed the article, the pronoun and the name under the class of substantives. Here again one sees her penchant for house-of-cards symmetries: she speaks of „processual“ „conditional“, and „copulative“ substantives (= „Verlaufs-“, „Zustands-“ und „Kopula“-Substantive), because allegedly there exist parallel distinctions with verbs and adjectives, indeed with all six word-classes. Behind all this terminological nonsense one recognizes the problem of the relationship between semantics and syntax, a problem which the authoress herself refuses to face, because supposedly, i.e. according to Weisgerber, everything can be explained

alone in terms of the „word-content“ (= „Wortinhalt“) and its implications. This leads to the strange phenomenon, that Rolland attempts to construct a complete German grammar without taking account of syntax, indeed without even defining the difference between semantics and syntax. When, however, these two linguistic dimensions are not distinguished, semantics itself suffers, since semantics represents the conceptual logic of the linguistic units (words, in particular). The specific idiom of the native-language may well play with this logic, but it by no means replaces or destroys it.

c) *The contradiction between the claim to holistic perspective and the denial of the „pragmatic“*

When one is forced to speak of a denial and repression of the syntactic dimension in this book, the next question is, how does the book treat the theme which has been in the forefront of attention since the 60's and 70's, the topic of linguistic pragmatics, in short the „speech act“ theory? While it is true, that in language systems everything is definable in terms of relations, our authoress recognizes only dual oppositions. Thus she reduces the original spectrum of speech acts to but two, declarative and interrogative sentences (p.291-). Where do expletives, wishes, self-portrayals, and the so-called perlocative speech acts like promises or such performative expressions of an executive character as e.g. nomination, baptism etc.) fit into the authoress's scheme? A theory of language claiming to be holistic - and this Rolland aims quite emphatically - cannot fail to take account of linguistic pragmatics. „Dialog“ with a computer, which is unable to understand typical interpersonal figures of speech such as threats and dissembling expressions like irony is in principle reduced one-sidedly to mere data-bank functions, i.e. to mere normative speech. Perhaps such a reduction may be necessary at the outset, but then one must openly avow the conscious character of such a restriction, all the more when one claims to follow Humboldt's *energeia* conception of language, as the authoress does repeatedly.

When Humboldt namely, as Rolland cites him, insists that language is not a ready-made „*ergon*“ but rather a continually active „*energeia*“ (cf. p.41f.), then this implies the Kantian shift from the object to the transcendental, i.e. the practice oriented conditions for the very possibility of objectifying information². Even when one understands language in the sense of „*langue*“ as an intellectual intermediary world (= „*Zwischenwelt*“), as an intermediating reality (= „*mediale Wirklichkeit*“) - and this the authoress does with full right - the fact remains, that both the construction of this intermediary world and its receptive reconstruction in the course of using language are in fact actions, i.e. acts in the broad sense of the cognitive processes involved in „acts of understanding“ as Kant would say. With Humboldt, many ideas remain at the level of the initial empirical differentiation of linguistic plurality and, on the theoretical side, on the level of intuitive programmatics. Thus his expressions are particularly suited to ceremonious but

vague quotation. Nevertheless, his emphasis on the energeia-character of language demands, without doubt, in the spirit of Kant, that language be conceived as a system of activities. The reduction of language to semantics, i.e. the objectivising, or better the already objectified dimension of language in fact directly contradicts Humboldt's own energeia-postulate. This critique holds already for Weisgerber's position. Regretably, the early transcendental philosophers, the German idealists, had themselves failed to analyze language sufficiently from the point of view of action theory (= „handlungstheoretisch“); this is due principally to their failure to recognize the plurality of semiotic dimensions.

From this wide notion of pragmatics in the sense of *action theory* a narrower notion in the sense of *interpersonal action* through language must be distinguished. For in fact, only in the interpersonal dimension does language become immediately practical. Again, I repeat, this practice is not reducible to the simple opposition between declarative and interrogative sentences. Where such reduction is made, one should not speak of linguistic computers with „dialog abilities“ or „computer dialog“. As long as this pragmatic or dialogical dimension of language is not taken into account, such a manner of speaking is not, in more senses than one, „linguistically conscious“⁴³.

In an aside, it should be noted here, that Rolland in no way takes into account the metaphorical, artistic meta-linguistic⁴ usage of language, which is rooted in day-to-day language-games. Instead, she postulates apodictic rules of correctness, after the fashion „this is possible, that is not“. Such rules tend to sound like carping criticism, e.g. „They conversed for hours“ is admissible, but „they conversed for years“ should not be (p.211). Personally, I find the second sentence much more interesting. Admittedly, such a sentence may presuppose a prior, „normal“ manner of speaking; different levels of speaking must no doubt be distinguished, but there are no grounds for setting up prohibitions or for programming the computer as dialog partner to admit the one sentence and reject the other.

d) Contradiction between a specific native-speech notion of semantics and a broader logical notion

The deceptively simple and self-evident notion of „semantics“ is nowhere explicated by Rolland. Is the „semantic“ identical with the „intellectual“ (= „geistige“) content of a word, a syntagma or a sentence in the logical sense? Rolland starts from a supposed „unity“ or „wholeness“ (= „Einheit“ or „Ganzheit“) of sound and meaning, sensuality and sense, and criticizes quite correctly those who (in positivistic or behavioristic manner) postulate an immediate relationship between the sound of a word and the non-linguistic world (p.51). On the other hand, she puts such emphasis on the „intellectual“ in the sense of the logical/conceptual, that she does not hesitate to treat even slightly divergent usages of one and the same word as pure

and simple homonyms, i.e. as different words unrelated except in their chance like-sounding pronunciation. Here a sample in the original German text with translation:

„So gibt es u.a. viele Präpositionen 'aus':
 Er ging *aus* dem Haus (von welchem Ort?)
 Er trank *aus* der Tasse (woraus?)
 Er stammt *aus* dem Ruhrgebiet (woher?)
 Er handelte *aus* Verzweiflung (aus welchem Grund?)
 Ein Buch *aus* dem vorigen Jahrhundert (aus welcher Zeit?)
 Ein Tisch *aus* Holz (aus welchem Material?)
 Ein Bild *aus* dem Nachlaß (aus welchem Besitz?) usw.“

English:

„Thus there are many different 'from' prepositions:
 He went *from* the house (from what place?)
 He drank *from* the cup (from of what object?)
 He stems *from* the Ruhr (from what province?)
 He acted *from* despair (from what basis?)
 The book *from* the last century (from what time?)
 The table *from* wood (from what material?)
 The picture *from* the estate (from what possession?) etc.

The logician will be delighted by the way the authoress here differentiates the diverse meanings of the word „aus“, treating them as intellectually unrelated homonyms. On the other hand, he must call her attention to the fact that, in order to explain these ostensibly separate words, she falls back on the very word she seeks to explain. This is a clear case of circular reasoning, for which the authoress has an obvious penchant. (Such circular reasoning reveals itself as well in the intricate network of cross-references from the present to later discussions and from later to earlier discussions. For the reasoning behind a particular statement, she almost invariably refers the reader to later discussions. Then, in the later discussion, the topic is said to have been explained in the earlier passages.)

When, in terms of „pure“ logic, a plurality of meanings are treated as entirely separate concepts, though subsumed in a particular language under one and the same like-sounding term, this should be a clear warning that „native-speech“ makes use of *analogical thinking which is logically anything but „pure“*, giving place to both similarity and dissimilarity. The question is, which semantics should we use, that of pure logic or that of analogical thinking. The latter is the semantics of „native-speech“. Rolland, a self-styled advocate of native-speech in the school of Weisgerber, here does violence to that very native-speech, when she treats analogically related meanings of one and the same sounding word as though they were entirely separate words, and only by chance homonyms.

Herein lies the complete inconsistency of Rolland's postulated „unity and wholeness“ (= „Einheit“ und „Ganzheit“) linking sound and meaning! Her failure to bring together her own ideas has serious consequences and raises a host of questions: to what extent is semantics to be understood as a linguistic interpretation of words at the level of native-language? To what extent is it a logical

interpretation of concepts independent of their particular expression in a native-language? What is to be said of the purported complete dependance of thinking on language?

Could it be that thinking - even granting that it is normally articulated in interpersonal linguistic form - transcends the unity of sound and meaning after all, in perception, in feeling as self-perception, in thinking as such, to say nothing of intuition? Could it be that the once fashionable professorial thesis about the complete immanence of thinking in language and the so-called „Unhintergebarkeit der Sprache“ - a thesis often posed on the authority of Humboldt - is obsolete after all? Had one really done language and language analysis a service by making or trying to make it the quintessence of thinking in all its forms? But Rolland herself by no means consistently follows the ideology of the linguistic immanence of thinking which she articulates (p.53). In the end, it is by no means clear, what her „interrogation per computer-’Dialog“ has to do with the German language. The suspicion arises, that this „natural language“ interrogation is in fact little more than an aid for users insufficiently in command of the English language. In any case, the attempt to clarify the specific native-language grasp of reality is quite incompatible with the homonymy passion which manifests itself throughout the book.

e) Contradiction between the authoress's fundamental claims and her unphilosophical denial of linguistic universals

The insufficiently explained relationship between the logical/conceptual element and the native-language element in the authoress's notion of semantics is closely related to the question of the unity underlying the diversity of mankind's native-languages. Already at the beginning of this article, I called attention to Rolland's denial of universal linguistic structures and to her claim that the „principles“ of her own version of language theory are valid „evidently for the structure of every language, ... albeit naturally in different concretisations proper to each specific language“ (p.41). „Naturally“ indeed! What else is meant by linguistic universals than just such principles? If the authoress is not in a position herself to work out such principles, this by no means gives her the logical licence, in contradiction to her own propositions, to deny their universal-linguistic character. What forces her into such self-contradiction? Certainly not her positive, native-language program. The answer to this question lies in the historical severance between language research, later linguistics, and philosophy. Much could be said at this point, but I will confine myself to one point alone: it is absolutely impossible to develop a „holistic“ theory of language without doing philosophy, because, first of all, language is the privileged instrument of human encounter with reality and of human thinking as a whole, *inasmuch* as thinking articulates and communicates itself intersubjectively, and, secondly, precisely because language is in fact *energeia* and not *ergon*. For this reason, the role of language must be interpreted by reconstructing

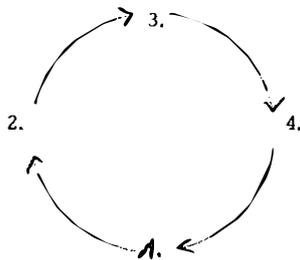
its underlying structures in terms of action theory (= „handlungstheoretisch“). For the same reason, language theory must address itself in philosophical terms to the full complex of the phenomenon meaning. Philosophy is, after all, to use the words of Kant, the universally oriented „art of the concepts“ or the science of meaning (= die auf's Ganze gehende 'Kunst der Begriffe' oder auch die Wissenschaft vom Sinn). This means, of course, on the opposite side, that the „philosophers“ must descend from their ivory towers, or, to put it better, that those who intend to philosophize must undertake to reconstruct language on the basis of the principles of consciousness. Then they will no longer be tempted to withdraw into the notorious ivory tower of the „guardians of being“, where holistic and concrete knowing never did take place. (Much the same must be said for the reflection on social structure and the relationship of philosophy to sociology.)

3. Critique from the standpoint of a reflective language theory of the semiotic dimensions

In 1981, the author of this review himself published a philosophical theory of language as the second part of his study „Reflexionstheoretische Semiotik“ (6). The first part of such a philosophical semiotic, a „study of the process of meaning“ (= „Sinnprozeßlehre“) consists of an action theory (= „Handlungstheorie“), i.e. a study of the semantics of human actions according to their respectively constitutive intentionality (6). In this context, language is interpreted semiotically, i.e. in accord with a theory of signs, as a meta-action, characterized by the fact that it regulates itself in the course of performance by means of its own syntactic meta-symbols. This theory of language, which is at one and the same time semiotic and philosophical-holistic, takes up the distinction between diverse semiotic dimensions as elaborated by Charles Morris; these are the syntactic, the semantic and the pragmatic dimensions of language (7). In addition, however, a fourth dimension of language is distinguished as elaborated by the former GDR philosopher and semiotics-expert Georg Klaus; this is the sigmatic dimension, i.e. the realm of denotation or object-relatedness of the signs (8). In my study, these four semiotic dimensions of language are explicated according to a principle relating them one to another and defining them in terms of increasing cumulative reflexivity:

1. the sigmatic or denotative dimension: the original relationship of the speaker to non-linguistic reality
2. the semantic or meaning-dimension: the relationship of the speaker to an already established intermediate reality of conceptual content (presupposing the first dimension)
3. the pragmatic or intersubjective action dimension: the relationship between speakers by means of semantics
4. the syntactic or connectional dimension; the relationship between linguistic signs, presupposing and reflecting the three previous dimensions.

Although the sequence, or better the hierarchical order of these four dimensions is grounded in the increasing levels of reflexivity, the sequence can be reversed when it is a matter of practice. In fact, the hierarchical viewpoint is fully compatible with a circular viewpoint as the following diagram shows:



What is at stake here is nothing less than the recognition and elaboration of the thesis that the principle of human self-awareness, i.e. self-reflexivity, is likewise the foundational and constructive principle of language: *Language is the intersubjective self-expression of human self-awareness*. It is self-evident, that the basic linguistic structures must be just as universal as general human self-awareness itself is universal. Nevertheless, such universal linguistic basic structures are realized only contingently in the diverse concrete native-languages. In this view, the supposed opposition between native languages and universal linguistic structures is rejected as undialectical and abstract and un-thought-out. (That human beings of different races share the same basic anatomy, is in fact more astonishing than the fact that their languages, despite their obvious diversity, manifest the same principles and fundamental structures.) Each native-language is a unique, contingent „incarnation“ or application of the universal linguistic structures. There are no fundamental difficulties with the distinction between the universal, generally human and logically necessary level on the one hand and the contingent, individual linguistic level on the other.

Everything depends upon the reciprocal „inter-penetration“ of the four semiotic levels. In the light of theoretical reflection, it can be shown that there are no more and no less than four such dimensions. This goal is served by the method of dialectical subsumption. In contrast to the usual formal subsumption of the individual under the general, „dialectical subsumption“ designates the ordering of the general or comprehensive under its particular determinations, in such a way that the particular determinations or subordinate distinctions themselves are further differentiated according to the principal criteria of differentiation. At stake here is the „harmonic“ or „holographic“ principle of the reflection of the whole in its individual constituents, a principle not unknown in intellectual history. The dialectical subsumption of the language dimensions within each other, sometimes in repeated further sub-differentiation, can here only be sketched schematically and in terms of a single step of sub-differentiation.

1. *The sigmatic dimension (denominative dimension)*

- 1.1 sigmatic sigmatics (the perceptibility of the sign-bearer)
- 1.2 semantic sigmatics ([the character of] the sign-bearer as the bearer of meaning)
- 1.3 pragmatic sigmatics (the localization of the linguistic sign in the context of action)
- 1.4 syntactic sigmatics (the determination of the linguistic sign within its system).

Under the heading 1.3, an important problem is treated, which particularly occupied L. Wittgenstein, although he mixed it up with other „pragmatic“ inquiries under the rather indefinite title „usage“; this is the question: How do the linguistic signs originally acquire their meaning as reference, i.e. as a relationship to the non-linguistic reality or at least, even when it is a borderline case of self-referring relationship to linguistic reality, to an intended reality other than itself? The four forms of acquiring reference (1.3.1 through object-related; 1.3.2 through subject-related; 1.3.3 through socially-related and 1.3.4 through auto-referential language games) cannot be further discussed here. The point is to illustrate the uniform, though by no means schematic-formalistic principle that reigns in language as a developed, dynamic system of action and reflection.

In connection with Rolland's purported purely semantic project, the semantic dimension of language deserves special attention. Within it, the following subdivisions arise in virtue of the application of dialectical subsumption.

2. *The semantic dimension*

- 2.1 Sigmatic semantics: identifiers (pronouns and names)
- 2.2 Semantic semantics: descriptors (word-classes)
- 2.3 Pragmatic semantics: logical predicate-classes
- 2.4 Syntactic semantics: combined predication (the logic of conditional sentences)

The attentive reader will immediately recognize the fundamental differences between my approach and Rolland's „semantics“. Here the word-classes really are introduced semantically (without borrowing from an otherwise disavowed syntax). Not through mere empirical fact gathering, but rather through logical reconstruction of the empirical evidence, two generic groups of word types are identified. The first is the sigmatic-deictic group (2.1 in the above table), composed of pronouns and proper names, whose function is to point to or to stand for objects. The second, the semantic group (2.2) is properly „descriptive“ in character and includes four word-classes with their own proper semantics, namely, substantives, adjectives, verbs, and situators with adverbs, prepositions and conjunctions as sub-classes. What real semantics of word-classes implies, illustrating as well how universal logic and native-language particularity interpenetrate, mani-

fest itself in the further subdivision of the descriptorial word-classes (sec (6) Pt.2, p.114-167). For example, relying entirely on word-content and not, as with Rolland having recourse to word-structure - the detailed demonstration would take us too far afield here - it is possible to subdivide the class of substantives into object-substantives, characteristics-substantives, process-substantives and idea-substantives.

The next group (2.3) consists not of isolated words but rather of types of predication understood as the *semantic* synthesis of word-contents. This is a properly *logical problem* and is identical with Kant's theory of the categories. The fourth group (2.4) corresponds to syntactical semantics and includes the logical possibilities of combining predications, i.e. the logic of conjunctive sentences. This is the theme of modern junctor-logic. Note that all this is only remotely related to specifically linguistic, i.e. native-language syntax; here we are dealing „only“ with the *general logical* foundations of such native-language syntax. On the other hand, the further subdivision of the different word-classes leads to a sifting of native-language vocabulary. And the comparative study of diverse languages in terms of such a general standard of comparison will reveal the significant differences in the world-views corresponding to different native languages.

In order to further clarify the relationship between semantics and syntax, let us skip over, for the time being, the pragmatic dimension, which is number 3 in the four-fold scheme above, and go directly to number 4 in that scheme, the syntactic dimension.

4. *The syntactic dimension*

- 4.1 sigmatic syntax: principles of morphology
- 4.2 semantic syntax: principles of sentence construction
- 4.3 pragmatic syntax: principles of text composition
- 4.4 syntactic syntax: principles of style (rhetorical figures)

The principles of sentence construction elaborated in semantic syntax (4.2) likewise contain a logical, universal linguistic scheme of potential sentence parts. Here too, the way this universal logic is realized concretely in a particular native-language remains quite open. Thus, in the syntactically constructed sentences in any language whatsoever, one universally finds a subject-predicate core, which may be combined with one or more of the *four primary sentence components*: objects, adverbials, identifiers, and modifiers. Here too, the way particular languages realize these possibilities of logical syntax can vary considerably and is by no means predetermined. Among the instruments used are: inflexion, rules of congruence, rules for word order, etc.

In principle, word-classes and their syntactic functions as sentence-members are variable with respect to each other, i.e. in principle, each word-class can fulfill the

function of any sentence-member, even though individual word-classes may well have preferential functions (both generally and in specific languages). This virtually boundless variability between word-classes and sentence-members is well illustrated by the German language: „Geben ist besser als nehmen“ (= „To give is better than to receive“), „Für ist besser als gegen“ (= „For is better than against“). The functions of the subject and the equation-member in such sentences can be filled not only by substantives and adjectives, but also by verbs and even prepositions. (Facts like this do not fit into Rolland's apodictic rules based on an insufficiently understood relationship between word-class and sentence-member.)

Which of the many possible forms of expression for the universal grammatical structures are actually used by a particular language is a matter for the study of the individual language and can at best be generalized in terms of empirical language typology. On the other hand, without recourse to universal linguistic structures, it is impossible to explain native-language syntax satisfactorily or to demonstrate the simplicity of its structures, aside from the particularities of morphology. I am well aware of the methodological breadth and critical implications of this claim with respect to existing grammar studies and am prepared to deliver corresponding proofs, on the basis of the theory of language, which this article can only sketch. Thus any German sentence, no matter how complicated, can, provided it is understandable and grammatically correct, be interpreted and expressed graphically as a combination of simple syntactic basic diagrams and can be represented optically in accordance with the additional distinction of primary, secondary and tertiary sentence parts which can only be mentioned here.

Granted, that what is here postulated, on the basis of philosophical, universally human structures of meaning, must be verified in detail for each individual concrete language. However, the prospects for such validation are at least as good or better than those for the validation of anatomical correspondences between Australian aborigines and human beings of European extraction. In an age of world-wide communication within the *one* human race, it should be more than legitimate to call attention to such universal grammatical structures underlying the wide spectrum of the native-language variety of the language of *one* mankind.

The demonstration of a universal linguistic grammar raises a monumental claim and opens a much wider perspective than that offered by mere native-language semantics. This is the claim to facilitate *machine-based translation from one native-language into another* on the basis of common (universal) syntactic fundamental structures, in short, *computerized translation*. Clearly, such a procedure must take into account the specific semantics of the languages in question, but in basing itself on a common underlying „depth grammar“, it goes well beyond the mere consideration of word-fields and „word-implications“.

„Depth grammar“ takes on the meaning - comparable to N. Chomsky's use of the term - of a universal, logically grounded grammatical structure, in relation to which the native language formulations constitute a surface level of expression. To designate this level, the term „expression level“ (= „Ausdrucksebene“) seems to me to be most appropriate, since this is the real level of language as contrasted with the underlying level of logic. In this „colorful reflection“ of a connective logical deep structure we find the real vitality of native-language. However, this distinction between universal *logical deep structure and contingent linguistic expressive structure* must in fact be drawn repeatedly for each of the semiotic dimensions described above. Every native-language, or better every native-language family, has its own way of expressing the universal logic inherent in the denotative, the conceptual, the interactive and the syntactic-connectual dimensions. Precisely the last of these, the syntactic dimension can be called the formal or expressive dimension of language par excellence. At the same time, it represents the specific systematizing dimension of language, in which the language reflects back upon itself and in stylized play with itself becomes artistic language.

It was a major error of the pragmatics boom of the Sixties and Seventies to exult language pragmatics as though it were the all-comprehensive dimension of language, an error into which both Morris and Klaus fell. Behind this error lay a confusion of the two meanings of „pragmatics“ distinguished above, pragmatics as linguistic action-theory in the comprehensive sense (= „handlungstheoretisch überhaupt“) and a more specific meaning focusing on the „social“ or interpersonal side of language. One of the sources of this confusion was the demand raised by the 1968-Movement, to view language like every other phenomena in its social and political context.

Understood in this narrower sense of the social or interpersonal pragmatic dimension, the following forms must be distinguished:

3. *The pragmatic dimension*

- 3.1 sigmatic information pragmatics
- 3.2 semantic expression pragmatics
- 3.3 pragmatic reception pragmatics
- 3.4 syntactic role pragmatics

These forms are reflected back in language as a self-referent syntactic system, i.e. as style. The one-sided theorists failed to explain - had they even recognized the problem - why the rules of grammar and meta-grammatical style are not the rules-of-the-game for social action as such. The reason for this failure lay in their failure to distinguish between social interaction as such and linguistic interaction as a meta-activity with respect to such action.

In the present review of Rolland's work, it is not the one-sided pragmatic-political understanding of language

which is in the forefront, but rather the one-sided semantic understanding (which is coupled with Rolland's failure even to recognize the existence of the other dimensions). It is not the intention of this paper to set off against such approaches an equally one-sided syntactic approach. What is here at stake is a *holistic-semiotic approach*, which does justice to all four primary dimensions of language:

- (1) the deictic relationship to reality as such;
- (2) the semantic relationship to the intermediate reality of meaning;
- (3) the relationship of social interaction; and lastly
- (4) the relationship to a self-referent system of grammar and style.

Within such a holistic view, the demands placed upon computer linguistics are significantly higher. At the same time it must be said, that, except in the case of such highly specialized tasks such as „informational interrogation“ (= „Wissensabfrage“), only such a holistic approach is in a position to fulfill such expectations. Till now, the realization of this program has failed, because such a theory of language sounds too philosophical for the linguists and too linguistic for the philosophers. No wonder, then, that such a program has failed to come to the attention of the computer linguists, just as it failed to catch the attention of the authoress of „Sprachverarbeitung durch Logotechnik“. Perhaps her „logo-technology“ could serve as a first step, the semantic step so to speak, towards a holistic system of language processing, but to do this, it must be freed from its problematical trimmings and reduced to its valid core, the lexicon of word-usage.

The decisive step, the first step needed to open the way to such a holistic view of language, will be the use of computers to model language as a multilevel reflexive system, as far as this may prove possible. Cybernetic auto-reflexivity (11) will never be in position to achieve, much less replace, the four reciprocal dimensions of self-reflexion, which constitute human self-consciousness. Nevertheless, for those who understand, what is involved here is not the creation of computers which can think and speak as human beings do, but rather the development of computers which can process language in a way that is comparable to meaningful human speech. Such computers need not operate on all levels simultaneously, a rapid sequential shift from one level to the other according to the logical progression from object-relation, self-relation, social-relation and system-relation through language will suffice. When will the encounter between linguistics and the revolutionary information technology of our time finally bear fruit? One thing is sure, only then, when linguistics and the philosophical theory of meaning once again are reunited⁹.

Notes

1 The evident falsity of Rolland's position becomes obvious when she compares the Latin adverb „pulchriter“ in the construction

„pulchriter cantavit“, in German „er sang schön“ (= „he sang beautifully“) with the German predicate-noun „schön sein“ (= „to be beautiful“), concluding that the German predicate noun is in fact an adverb. This goes far beyond the assertion it was meant to support. Thus the authoress makes the claim, that in the German sentence „Das schöne Buch liegt auf dem Tisch“ (= „The beautiful book lies on the table“), the word „schön“ (= „beautiful“) is indeed an adjective, but that in the sentence „Das Buch ist schön“ (= „The book is beautiful“), the word „schön“ (= „beautiful“) functions as an adverb.

2 Humboldt's contemporary J. G. Fichte called „objectifying“ the fundamental function of all language, whereby he himself was primarily interested in the transcendental conditions of objectification. See my contribution in (3).

3 See my contribution in (4).

4 For the notion of art as meta-language and language as meta-action, see my study in (5).

5 For more on this point, see my paper under (9).

6 Prof. Dr. Heinz Hamm of the Sophia University in Tokio has taken up the problem of the translation of reflexive-theoretical language theory; he is evidently convinced of the utility of this theory for trans-linguistic and trans-cultural translation.

7 At first sight, Noam Chomsky's „generative transformation grammar“, with its dichotomous (dualistic) branching structures, appears to correspond well with the binary principle of the computer. At closer sight, however, it becomes clear that speech, as the expression of human self-awareness, is - except for certain special aspects like phonetics - by no means constructed according to a dichotomous binary logic. Instead, speech follows the four-value logic of human self-reflexivity. The challenge of constructing a mathematical formalism to represent the logic of reflection was recognized and taken up, albeit still inadequately by the logician Gotthard Günther (see (10)) and some of his students (see (11)). On the other hand, the processual reflective logic of language by no means requires logical formalization to be reconstructable by the computer. Technical operationalizing does not necessarily entail logical formalizing. Thank goodness! Otherwise we would probably have to wait even longer to reap the fruits of the difficult re-encounter between logic and philosophy. Independently of such considerations, the reconstructability of speech processes in terms of information-technology is grounded, I believe, in another aspect of computer technology, namely the cybernetic aspect, which is analogous to the principle of reflexivity (see Footnote 12) and independent of the binary principle. The four-fold structure of human self-reflexion outlined, though not extensively demonstrated in the course of this paper (see Footnote 9 and the work there cited), can very likely be simulated by the quasi-reflexivity of a cybernetic information hierarchy. Viewed from this angle, the computer would appear to relate more closely to the model of language in terms of reflection-logic than it related to Chomsky's dichotomous binary model, which in fact has failed as a theory of language.

8 The parallel between cybernetics and the problem of transcendental philosophical reflection was first thematized by Gotthard Günther in (10).

9 N. Luhmann has spoken repeatedly of „reflexive mechanisms“, but has failed to grasp what makes self-reflection unique, namely the identity of the two related beings and the relationship joining

them (the knower, the known and the act of knowing). With this failure, however, he is in good company of the philosophers D. Henrich, M. Frank and their disciples, who believe they have refuted the reflection-theory of self-awareness. When the social sciences show a deficit with respect to a „concept-culture“, this is for the most part due to deficits in the foundational discipline philosophy (Cf. Dahlberg, I. in (13)).

10 Once again, I repeat, meaning is not just a matter of language meaning. One does language a disservice, when one tries to make it the quintessence of everything knowable or thinkable. The „linguistic turn“ can only succeed, when it is seen as an expression of and partial realization of the Kantian „transcendental turn“. The mistaken attempt to view it as the replacement of a philosophy of consciousness by a philosophy of language has time and again found advocates from Humboldt via Wittgenstein and his followers in analytical philosophy to Habermas, but inevitably proves to be unfruitful. Rather than reducing thinking and consciousness to language, the real task is to conceive language as related in thinking to the structures of consciousness.

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Dr. habil. Johannes Heinrichs,
Hauptstr. 16, D-53547 Leubsdorf, Germany.



Onomantics and Terminology Part II: Core Concepts

Riggs, F.W.: Onomantics and Terminology. Pt.II: Core Concepts

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In both Onomantics and Terminology there are about a half-dozen core concepts which overlap but do not coincide with each other. They include what is called representation, description, cue, tag and notation in Onomantics and, in Terminology, definition, designation, term, symbol and name. A lexicographer writing a synonymy for such words might compare their meanings to show how they resemble or differ from each other, using a Semantic (words-to-meanings) point of view. To compare concepts (not words) in an Onomantic (Ana-Semantic, or concept-to-tag) context, one needs to compare the descriptions (definitions) of each concept to see whether they, indeed, have the same or different essential characteristics. One also needs to compare the notations that situate each concept in a system—even if the definitions of two concepts are almost the same, one might discover that because two concepts are positioned differently in their respective classification schemes, they are conceptualized differently. Finally, the concept tags (terms) used to represent each concept can also be compared semantically, i.e. to see whether their connotations and additional meanings support or hamper the unambiguous recognition of each intended concept. After an introductory display of the two sets of concepts, each of those used in Terminology is compared systematically, using all three sets of comparisons, with the nearest equivalent concepts used in Onomantics.

(Author)

1. Terminological Usage

In Part I of this essay, the **concept representation** (onomantic) paradigm of Onomantics was explained, and its five core concepts were described and presented in Schedules IA & IB. To understand the discussion which follows, readers need to refer to it frequently—a copy can be found in an endnote¹. Please remember that each core onomantic concept is represented by a notation number in braces, starting with {1} for *representation*, and continuing with {1.1} *description*; {1.2} *cue*; {1.2.1} *tag* (or *c-tag*); and {1.2.2} *notation*. In Part III, I will discuss some other concepts and terms presented (or ignored) in *ISO 1087*, but here, in Part II, I shall limit myself to a discussion and comparison of the core concepts of Onomantics by contrast with those prescribed for Terminology and listed in Schedule II. They are copied from *ISO 1087* (1990), the last formally printed version of the vocabulary published by the Technical Committee on Terminology of the International Organization for Standardization (ISO/TC37).

SCHEDULE II: CORE CONCEPTS USED IN TERMINOLOGY (ISO 1087)

[2.1] **object**: Any part of the perceivable or conceivable world.

[3.1] **concept**: A unit of thought constituted through abstraction on the basis of properties common to a set of objects [2.1].

[4.1] **definition**: Statement which describes a concept [3.1] and permits its differentiation from other concepts within a system of concepts [3.10].

[5.3.1] **designation**: Any representation of a concept [3.1].

[5.3.1.1] **symbol**: Designation [5.3.1] of a concept by letters, numerals, pictograms or any combination thereof.

[5.3.1.2] **term**: Designation [5.3.1] of a defined concept in a special language by a linguistic expression.

[5.3.1.3] **name**: Designation [5.3.1] of an object [2.1] by a linguistic expression.

NOTE: these notations are enclosed in brackets — “[...]” — to distinguish them from those presented in Schedule I. By this means, readers will be able to compare {1.1} *description* with [4.1] *definition* to see how two similar yet significantly different concepts are represented (by texts) and systematized (by notations) in Onomantics and Terminology. Throughout this paper, I shall use *terminology* (in lower case) to identify the vocabulary of a field, but when thinking about the field of study, I shall capitalize the word: i.e., *Terminology*. The same convention is used to distinguish the name of any field of study from the relevant activity: e.g. Politics (or Politology) vs. the practice of politics; Statistics from statistics; Administration from administration, Art from art, etc.

The comparisons discussed below may seem confusing unless the reader can quickly recall the meaning, for example, of {1.1} in Schedule I and its counterpart, [4.1] in Schedule II. To make sense of a complicated set of comparisons, keep a copy of both schedules at hand while reading this article: bear in mind the fact that each concept is identified by a notation (which locates it in relation to other concepts), a description (a defining text) and also by one or more tags (c-tags, or terms).

Three Key Words. As a preparation for the more detailed analysis to follow, let me call your attention to three key words that appear above as types of “designa-

tion” [5.3.1]: *symbol*, *term*, and *name*. Since “designation” is offered as a way to represent a concept, you might be puzzled to understand, for example, why “name” appears in this list, and you might think that some numbers (2 = “two”) appear in the chemical term for water, whereas (2 = “second”) appears in the notation for “term,” i.e. [5.3.1.2]— this means that some symbols are used as tags (terms) but others are used as notations.

These three words can be used by lexicographers to help them decide whether or not to prepare dictionary entries. The rules linked with each of them could be explained as follows:

Symbols: don’t prepare an entry for a symbol because it cannot be spelled alphabetically and dictionary entries are almost always alphabetized. For example, you can write entries for *ampersand* or *and per se* and but you cannot put & in alphabetical order. Symbols, like “2,” often stand for different words, like “two” and “second,” each of which has different meanings. *Webster’s* (1991) does not enter symbols, though numbers are used in entries: for example, the entry for digit mentions “1 though 9 and 0” in its definition and, of course, these digits are used to mark the sense numbers in every dictionary entry. In *the American Heritage Dictionary (AHD)* one will find a list of symbols near the entry for symbol, but this is not a common practice. By contrast, letters of the alphabet (although they may be used as symbols) can be alphabetized and entries for them, therefore, head every section of a dictionary, running from A to Z — the lexicographic understanding of a *symbol*, therefore, does not coincide with the terminological meaning of this word defined in *ISO 1087*.

Terms: lexicographers often use “term” to mean any *lexeme* or *vocabulary entry*. As defined in *the Oxford English Dictionary (OED)*, sense 13B, a “term” means “any word or group of words expressing a notion or conception”. *Webster’s Third New International Dictionary (W3)* defines “vocabulary entry” as a word or “term” (*as man in the street*) entered alphabetically in a dictionary...” Thus dictionary entries may be written for any term (word, phrase, or affix) that can be defined as a general concept, but not an object (individual concept).

However, some lexicographers use *term* for the more specific concept of a “technical” or “scientific” expression. The compilers of an ordinary language dictionary, like the OED, that omits technical terms, need to distinguish between ordinary and technical terms, writing entries only for the former. By contrast, other dictionaries, like W3, include both ordinary and technical terms — *lexeme* and *polyseme* are examples. Consequently, they make no distinction between ordinary and technical terms and these two concepts tend to merge into a fuzzy conception.

Names: lexicographers use names to identify persons, places, institutions, books, buildings, etc., but not concepts. “Grace” can refer to a person who may or may not

be “gracious”. However, lexicographers differ among themselves in the way they handle names. Many dictionaries, including both the OED and W3, ignore names: they write entries only for terms. However, more flexible lexicographers include entries without definitions: they may identify individuals, like “Raphael,” as an archangel or as a Renaissance painter, and they may even add pictures, as in *the American Heritage Dictionary*. Another option is to list names separately, as in the “who’s who” and “gazeteer” appendices found in *Webster’s New Universal Unabridged Dictionary*.

In a strictly onomantic approach based on the quest for suitable means to represent concepts, as discussed in Part I of this paper, one should recognize three main components: a description of the essential features of a concept, a short word, phrase or symbol that could conveniently designate the same concept, and a notation that would place it in the context of a system. The only way I can explain how *ISO 1087* happened to come up with the three core items (terms, symbols and names, and ignoring definitions) presupposes their reliance on a *term list* [6.1.2.6] borrowed from Lexicography, linked to an entry format based on semantic analysis. A discussion of the practices that led to the production of the glossary for terminologists will appear in Part III of this article.

Onomantic Comparisons. Here, however, let us compare onomantically the key concepts used by Onomantics and by Terminology. Each of them will be discussed in their onomantic order — i.e., from {1} to {1.2.2} as presented in Schedule I.

Since three forms of representation are needed for each concept, we need to consider all three of them whenever onomantic comparisons are made. Under each concept heading, therefore, I will use the letters, “A”, “B”, and “C” to separate the comparisons based on *their notation*, *description* and *tag*. The notations are discussed first because they establish the system of concepts that needs to be taken into account when considering each concept in the schedule. The descriptions provide the most important information because they stipulate the essential characteristics built into each concept. Since c-tags are, typically, words or phrases with several connotations that can easily create ambiguity, we need a semantic method to highlight these meanings and see how they affect their use².

By contrast, semantic comparisons only require the analysis of what different words mean — notations are not involved and the analysis of definitions involves only how well they reflect the actual usages of a word, not whether or not they identify different concepts. Semantic comparisons focus on differences between the meanings of words (lexemes) as reflected in the *entries* that might be written for them in a dictionary. By contrast, onomantic comparisons explain the differences between concepts as revealed by the *records* that may be offered for them in a conceptual glossary.

Part I of this article elaborated on the distinction

between (semantic) *entries* and (onomantic) *records*. Both are involved in the discussion that follows but it is not always necessary to distinguish between them. Consequently, I shall use *gloss* generically to mean any entry or record found in a glossary³. Whenever the distinction is significant, I shall use “entry” to mean *asemantic gloss* in which the meanings of a lexeme are defined, and “record” (or “concept record”) will always mean an *onomantic gloss* in which a concept is first identified by a notation, secondly described, and thirdly followed by any c-tags available to represent it.

Glosses, Forms and Pleonasm. Moreover, I shall use *gloss* whenever the necessary distinction is not clear: for example, the glosses in *ISO 1087* have the semantic format of an entry but, at least ostensibly, the onomantic content of a record. I shall also omit the modifiers, ‘semantic’ and ‘onomantic,’ before ‘entry’ and ‘record,’ respectively. Moreover, it is often unnecessary to decide whether a gloss is “really” a record or an entry — when it does not actually matter, the use of ‘gloss’ enables us to avoid arguments about its proper categorization, or the use of an unnecessarily precise term.

It is often useful to have a word for a generic (superordinate) concept that includes two more specific (subordinate) concepts — using ‘gloss’ this way is a good example. Consider another available to lexicographers which I have already discussed: they often enter *phrases* and *affixes* in a dictionary although, no doubt, most entry words are, indeed, orthographic *words*. To avoid having to repeat “word, phrase or affix,” they can use *lexeme* (or “term”) to refer to all of these linguistic forms. Similarly, ‘gloss’ enables us to associate entries and records in a single superordinate concept.

Note that lexicographers also use *form* (or *orthographic form*) to talk about the way a lexeme is written, i.e. whether it is a ‘word’, ‘phrase’, or ‘affix.’ We need an even broader notion in Onomantics to refer not only to the form of a lexeme but, more broadly, to include any linguistic form (such as a clause, sentence or even a text) and also non-linguistic forms (symbols, such as letters, numbers, and graphics) that can represent a concept. It seems quite reasonable to use “form” in this sense — or to modify it with “onomantic form” to refer to the way any notation, c-tag, or concept description is written — identifying it as an appropriate way to represent a concept. By contrast, lexemes are “semantic forms” because each represents one or more concepts and is, therefore, appropriately used as an entry word in a dictionary entry: all lexemes are semantic forms, but many onomantic forms are not lexemes.

Speaking of forms leads me to mention that double quotation marks, “...”, are used here to mention lexemes whose meanings are being discussed, but when words are mentioned as forms without reference to their meanings, they are enclosed in single quotation marks, ‘...’. We may, therefore, say that ‘form’ is a four-letter word, while “form” means the way a lexeme is written, or a concept is represented. When an expression is emphasized or

introduced, it is written in bold face or italics, but in subsequent references, quotation marks are used to avoid overemphasis.

Finally, let me say that when one c-tag does not clearly represent a concept, it is quite appropriate to insert *pleonasm*s — typically in parentheses. These are other forms that represent the same concept. Sometimes a more precise word is used — e.g. word (lexeme) — or a specific form in addition to a genus — e.g. gloss (entry). The point in each case is to overcome possible ambiguity by using a second term (c-tag) that can help readers see more precisely what an author has in mind. I call it the *pleonastic solution* and make frequent use of it in this article.

{1} Representation.

A. Notation. Since no notation follows ‘representation’ in the definition of “designation” [5.3.1] we can conclude that there is no separate gloss to define “representation” in *ISO 1087*, even though the word appears in:

[5.3.1] which defines *designation* as any “representation” of a concept. Other glosses help us see what the authors of this glossary had in mind. Consider

[5.3.1.1, 5.3.1.2, and 5.3.1.3] identify three forms of designation: *symbols*, *terms*, and *names* respectively. By definition, therefore, all three forms represent concepts — see [5.3.1]. However, concepts were defined in 1990 [3.1] as abstractions based on the properties of **two** or more objects [2.1] and names were assigned to one object only, hence an object could not be a concept. In a subsequent revision, *individual concepts* were added to the glossary and defined as pertaining to a single object — concepts were also re-defined as properties of “one or more object”. This revision enabled the compilers to claim that a name is also a designation because it can identify an individual concept, as well as an object. Consider also

[4.1] which defines *definition* as a concept “description” but not as a “representation” of a concept. Although *designation* [5.3.1] is defined to include “any representation” of a concept, definitions are excluded by their notation number, [4.1], which classifies them as both hierarchically superordinate to and separate from designations. By contrast, since Onomantics clusters all forms used to represent concepts, it has to include concept descriptions (definitions) as one of the forms of concept representation.

In Onomantics the forms that represent a concept include texts which identify its essential characteristics (i.e. {1.1} concept descriptions) by contrast with succinct forms used to designate concepts ({1.2} cues), including both “terms” (c-tags) and “symbols” (notations). Although the definition of “designation” in *ISO 1087* (at [5.3.1]) fails to make this distinction, the notation used clearly shows that the intended concept is that of concept cues {1.2}.

More importantly, the lack of “representation” as a top term in *ISO 1087* means that the two basic forms of representation — “descriptions” and “cues” — are treated as top terms. Each heads a hierarchy and cannot, therefore, be viewed as coordinates, as two different ways to represent a concept. Instead, they are viewed in *ISO 1087* as unrelated to each other. Perhaps they could be viewed, as they are in *Logic* and *Lexicology*, as two parts of a whole, i.e. as the *definiens* and *definiendum* found in *definitions* (as this word is normally understood). In a semantic context, the lexeme to be defined is a *definiendum*, and each of its senses is described by a *definiens*. The two concepts are parts of a whole: every definition contains a *definiendum* and one or more *definiens*.

This logic vanishes in *ISO 1087* where *definition* means a “*definiens*,” and *designation* a “*definiendum*”. However, the equation is imprecise because *designation* includes not only *definienda* (terms) but also notations (symbols). If this explanation sounds complicated, it is. I cannot think of a simpler way to explain the confusion that has resulted from borrowing lexicographic terms (*definition* and *term*) and stipulating marginally different meanings for them. Moreover, I cannot imagine a way to clarify the matter by re-defining either of these borrowed terms. The only way to be clear is to start over with a basic recognition of the onomantic context in which concepts can be **represented** by different forms, including both descriptions and cues, and cues can include both *c-tags* and *notations*. Any effort to use “definition” and “term” as synonyms is sure to cause confusion.

B. The Description. No entry for the most general concept relating to the representation of concepts occurs in *ISO 1087* — as noted above.

C. Tag. Although the word, ‘representation,’ is found in the gloss for *designation* [5.3.1] as noted above, it is not given as a *c-tag* and we cannot, therefore, determine just what the glossators of *ISO 1087* had in mind when they spoke of concept “representation,” although their notations (as indicated above) suggest that they considered designations (cues) to be representations of concepts, but not definitions (descriptions).

{1.1} Description.

A. The Notation. The concept [5.3.1] *designation* is defined — see Schedule II — as “any representation of a concept” but the record for *definition* is located at [4.1], indicating that the compilers of *ISO 1087* do not consider that a concept’s definition can represent it — as explained above. Yet surely the starting point for representing any concept involves identifying its essential characteristics. Without a concept description, we do not know precisely what we are talking about. To represent the concept of a computer device used to control the action under Windows, for example, we need to see it in operation or describe it — only after we know what we are talking about can we accept any convenient word, like “mouse”,

as a way to represent it. That is why, in the onomantic perspective set forth in Schedule I, two basic forms of concept representation are given: {1.1} descriptions composed as texts and {1.2} concept cues, i.e., short forms like words or symbols.

B. The Description. A concept that resembles {1.1} is described in [4.1] *definition*. However, an important difference should be noted. It involves the stipulation in the definition of [4.1] that “definitions” must differentiate concepts “from other concepts within a system of concepts”. No doubt concept descriptions often do specify such relationships but does their absence disqualify a description?

Consider the description of the concept of an “object” in [2.1]: it does not mention any relationship to other concepts within this glossary, and yet the authors of *ISO 1087* handle it as a “definition”. For me, the identification of related concepts is an accompanying but not a necessary characteristic of a definition: it is like defining birds as a *flying* animal even though some birds (like an ostrich) cannot fly. Birds can be defined as “feathered vertebrates” but their ability to fly is an accompanying (“accidental”) characteristic, not an essential defining one. It is, therefore, an error to include accidental characteristics in the definition of “definition”.

Actually, most (though not all) of the definitions in *ISO 1087* do specify some relationships to other concepts. For example, the definition of “concept” [3.1] includes “object [2.1]” in the text, thereby indicating how concepts are related to objects. However, the most important device for showing how concepts are related to each other is a classification scheme with notations which locate concepts within such a scheme — concept descriptions provide supplementary information but they cannot substitute for notations.

Despite the definition offered in [4.1], therefore, definitions do not need to show concept relationships. This is true of almost all dictionary definitions, but definitions in a terminological (conceptual) glossary often specify relationships with *key concepts* in a formal way, namely by including within each defining text a notation for each of its key terms. Each such term leads users to the definition in another entry in the same glossary which identifies a “key concept,” i.e. one that is closely related to the concept being defined. For example, the definition of [5.3.1] *designation* (which I quoted in the previous section) reads: “Any representation of a concept [3.1]”. If the notation, [3.1] were omitted from this definition, it would still be a “definition” but here the relationship of “*designation*” to “*concept*” is indicated by marking it as an “*entailed term*” — I will discuss this term in more detail in Part III of this article.

No doubt, in a general way, all the words used in any definition reflect relations between concepts, but only the words or phrases that are marked with a notation symbol clearly refer to other concepts that have been defined in the *system of concepts* glossed by the entries in *ISO 1087*

— i.e., a “structured set of concepts,” not a random collection of associated ideas. Moreover, consider that in alphabetized dictionaries (and glossaries) the key word used in a definition can be found as an entry word in alphabetical order. By contrast, in a conceptual glossary whose records are headed by notations, one must have the notation in order to find the related record.

The focus of interest in any conceptual glossary is, surely, on relations between the concepts defined in that glossary. If we think about each gloss in a conceptual glossary as a record that identifies a single concept, then we can assume every concept defined in a glossary's system of concepts must have its own gloss. To say that a definition permits the differentiation of any defined concept from “other concepts within a system of concepts” can be meaningful only if the definition identifies, by a notation, the location of the glosses that define each concept within the system. (In hypertext, no doubt, entailed terms in a definition can support jumps to the relevant gloss, but that is a refinement we need not consider here. Although relations between concepts can also be shown by indentations in lists, and by graphics, these techniques supplement notation numbers which are still the most efficient and commonly used technique to display relations between concepts).

Of course, most words used in definitions bring related concepts to mind. This includes all the definitions found in ordinary dictionaries where it is rare to find explicit links between concepts defined in different entries. Dictionary definitions seek to explain the meanings of a word but they do not claim to link their definitions with each other in any systematic way. Consider, here, a useful distinction between *interdependent definitions* which do link concepts by the explicit marking of entailed terms— as illustrated by “object [2.1]” in the definition of “[3.1] concept” — and *independent definitions* which do not contain such explicit cross-references⁴.

We could say, then, that most of the concepts defined in a conceptual glossary ought to have interdependent definitions, whereas ordinary dictionaries normally supply only independent definitions. However, to say that a text is not a “definition” unless it provides cross-references to other concepts defined in the same glossary is surely misleading even though, of course, glosses in a conceptual glossary ought to provide such information whenever a given record is, indeed, closely related to another concept defined in the same work.

C. The Tag. When we compare the words *description* and *definition* we find other differences that are not essential for the defined concepts — rather, they pertain to the connotations of the words used to represent them. In Logic, definitions always have two components: a *definiendum* to be defined, and a *definiens* that defines it. As used in Lexicography, a “definition” is a “formal statement of the meaning of a word” (see Hartman 1990 and Robinson 1983) — this usage is consistent with the specifications found in Logic. According to Sager, “In

terminology it is customary to restrict the use of ‘definition’ to the explanation of the accepted specialized meanings of lexical items [lexemes] the occurrence of which can be documented in a variety of sources” (1990, p.40). Sager's definition of *definition*, therefore, is consistent with the established usage in Logic and Lexicography — he merely adds the limitation that Terminology is only interested in defining the terms found in special languages, rather than looking at all the lexemes of an ordinary language, as lexicographers do.

In *ISO 1087*, by contrast, a new meaning is stipulated for “definition” — it is defined as the description (a *definiens*) of a concept without any mention of a term (lexeme) to be defined (a *definiendum*). Such a concept description lacks a subject and predicate and therefore should not be written as a sentence, yet the definitions in *ISO 1087* (1990) start with a capital letter and end with a period — this error has been corrected in subsequent revisions. More importantly, ‘definition’ is used here as a metaphor to represent something significantly different from what it ordinarily means. We are, of course, familiar with many metaphors in daily use: a computer *mouse* that controls the cursor on a Windows screen is a metaphor whose new meaning differs substantially from its ordinary sense as a kind of rodent. ‘Mouse’ is a viable metaphor because the semantic distance between rodents and computer tools is so great that no ambiguity occurs, but when a metaphor represents a new concept that closely resembles the original meaning of the word, ambiguity becomes unavoidable.

Such ambiguity is intensified when members of a discourse community are themselves divided in their usages: when a terminologist like Sager uses *definition* as this word is normally understood but *ISO 1087* stipulates a metaphoric new meaning for the word, as a neologism, confusion is sure to arise. My claim that metaphors are neologisms, incidentally, is supported by *ISO 1087* which defines *neologism* [4.22] as a “term that is newly coined or recently borrowed from another language or another subject field”. To re-define “definition” as a *definiens* without a *definiendum* is, surely, a metaphoric neologism.

By contrast, the notion of a *concept description* is clear and understandable — it is even supported by the definition of “definition” offered in *ISO 1087* at [4.1]. The prior meaning of “definition” hampers the metaphoric use of this word in Terminology — most terminologists, I suspect, do not remember the small but crucial difference between ordinary definitions and terminological definitions, but they could easily remember the concept if they were to think of it as a “concept description,” and to recognize it as one of the three main forms used to represent concepts.

{1.2} Cue

A. The Notation. The closest conceptual equivalent to a cue is *designation* [5.3.1] which, as shown by the

notation scheme copied in Schedule II, embraces three subordinate concepts: *symbols*, [5.3.1.1] *terms*, [5.3.1.2] and *names*, [5.3.1.3]. Let me delay a discussion of “symbols” and “terms” until later — under {1.2.1} tag; and {1.2.2} notation. Here, however, a comment on names seems appropriate because it has no counterpart in Onomastics — rather, it belongs to the parallel field of Onomastics, the other branch of Onomasiology.

The treatment of “names” has changed since the publication of the 1990 standard version of *ISO 1087*. In that version, *names* were defined as identifiers of individual objects, and concepts were defined as notions based on the properties of two or more objects. This meant that names could not be designations without contradicting the definition of this word offered in [5.3.1] — see Schedule II.

To overcome this difficulty, perhaps, the notion of *individual concepts* was introduced in subsequent revisions — e.g. in the 1994 version listed below. It was defined as a concept “that refers to an individual object,” and “Saturn” is mentioned as an example — the word, ‘Saturn,’ is viewed as a human construction used to represent the “concept” of a certain planet that moves around the sun. To support this usage, it is argued that the object itself has no name, but we have a “concept” of the planet, and that is an individual concept.

By contrast, *general concepts* are defined as those that relate to two or more objects, replacing the 1990 definition of concept, which was then re-defined to mean a broader concept, a notion based on one or more objects, not two or more objects. No doubt there are philosophical reasons for making the distinction between an object and its individual concept. However, since Onomastics provides theories to explain the naming of objects (individual concepts) and Onomastics deals only with the designation of general concepts, the onomantic notion of a *cue* limits this concept to expressions that represent general concepts. On the premise that, in Onomastics, there is no need to discuss individual concepts, the word “concept” can be used unambiguously in this context to mean only “general concepts”.

Does Terminology, by contrast, need to make the distinction between individual and general concepts? Actually, I believe, all the examples of designation found in *ISO 1087* refer to general concepts, not to objects (or individual concepts). Moreover, so far as I can see, terminologists typically focus on general, not individual concepts⁵.

If so, are the philosophical considerations that lead to this distinction really needed in Terminology? I cannot be sure the answer is “no,” but if one considers the Lexicographic origin of many terms borrowed in Terminology, one can easily find an explanation for the inclusion of *name* in *ISO 1087*. I suspect that when terms were originally selected for inclusion in the glossary, ‘names’ were bunched with ‘symbols’ and ‘terms’ without much analysis of their meanings — the treatment of names in

dictionaries raises difficult problems for lexicographers, as explained above, see p.3 ?? . The subject is also discussed in works on Semantics⁶.

Later, when it was decided to subsume these three terms as subordinates of designation [5.3.1], an unexpected paradox emerged. If designations refer only to concepts, how could they include the names of objects if concepts, by definition, were based on the properties of two or more objects. One solution to this difficulty could have involved removing ‘name’ from the list of types of “designation”. The record for [5.3.1.3] could have been deleted — or a new notation could have been assigned that would associate “names” with “objects” rather than with “concepts”.

By contrast, the introduction of “individual concepts” made it necessary to revise the definition of “concept” to make it include the “properties of a set of one or more objects” (draft of *ISO 1087*, 1994). The new distinction between *individual* and *general* concepts, therefore, not only broadened the concept of concept but it made the word *equivocal*⁷ in the sense that it now has two meanings for terminologists — its original meaning (as prescribed in 1990) and a new meaning (in the revisions). Undoubtedly some ISO members will think of the first definition of a concept (including only general concepts) and others of the second (including both individual and general concepts), thereby increasing the potential for ambiguity when this key word is used⁸.

To summarize, if an object can be viewed as a concept (individual concept) then the meaning of “representation” is also broader than that of “cue” because it includes the names of objects as well as expressions used to represent “general concepts”.

B. The Description. Turning from their notations, let us compare the following concept descriptions for cue and designation:

[5.3.1] **designation:** *Any representation of a concept*
[3.1].

{1.2} *a representation that succinctly identifies a particular concept:* **cue:**

{1.2} excludes concept descriptions — they are not “succinct,” in the sense that a lexeme is succinct (a minimal form that conveys a meaning) by contrast with texts (containing two or more lexemes). In context, as shown above in A., all “designations,” as understood by users of *ISO 1087* are, indeed, “cues,” but the defining text in [5.3.1] could well be understood as broad enough to include definitions also. If this text were revised to exclude concept descriptions (definitions), then it would identify something that closely resembles a cue {1.2}.

However, there is another problem. The definitions of {1.1} and [5.3.1] are not equivalent if different concepts are intended by the use of “concept”. If this word is defined, as it was in 1990 [3.1] — “a unit of thought

constituted through abstraction on the basis of properties common to a set of objects [2.1]” — then the onomantic and terminological senses of “designation” and “cue” would be quite similar, but when “concept” is revised to include the properties of a single object, then “designation” and “cue” become more different. Actually, *concept* designates the most fundamental concept in Onomantics: in an earlier and longer draft of this article, I discussed the concept of a “concept,” but in order to limit the length of this essay, I have eliminated this material, reserving it later treatment.

Nevertheless, we should be clear about the effect revisions of a “definition” have on concepts. In a semantic context, it is easy to assume that words have meanings which have been poorly defined — if so, revisions may clarify these meanings. A new dictionary, for example, may claim that its definitions of established words are better than those of a rival, or that a new edition improves on definitions found in an earlier version.

In an onomantic perspective, however, words are only c-tags to represent *ideas* that have been described in a text which identifies the essential characteristics of a concept. Reverting to the previous section, we can see that

- (1) an *idea* based on “all the properties of a single object” is, clearly, different from
- (2) an *idea* based on “properties shared by two or more objects”.

These two notions suggest a superordinate concept:
(3) includes both (1) and (2).

In the 1990 text of *ISO 1087*, “concept” was used to represent (2), but in 1994 it had been replaced as the designator of concept (3). Two new terms were then needed for (1) “individual concept” and (2) “general concept”. In this simple example, the word ‘concept’ became a metaphor as its meaning was changed from (1) to (3), and users of the glossary who could not remember its new meaning find the word has become equivocal for them. The meaning of a word was not clarified by the revision — actually, its meanings had become more confusing.

C. The Tag. Let us now look at the c-tag, *designation*, chosen to represent concepts [5.3.1]. Semantically speaking, *to designate* is a polyseme: among several other senses, it may mean either the signification of a concept, or the name of an object, but not both at the same time. In [5.3.1], “designate” was used only in the first of these senses, i.e. to represent concepts derived from two or more objects. However, in ordinary language, one may say that a person (one object) has a “designation” just as one may speak imprecisely of “naming” a concept.

Consequently, “name” and “designation” are, semantically speaking, polysemes that sometimes refer to concepts and sometimes to objects — consequently, each word can represent two different concepts needed by

terminologists, and they are therefore *equivocal* terms. To overcome the resulting confusion, one may coin neologisms, such as *nom* and *c-tag* — as explained in note no.8. Although “tag” admittedly has other meanings, it (or c-tag) can be used unambiguously in Onomantics to signify any cue that represents a (general) concept (but not an object, or an “individual concept”) and “nom” can be used to refer unequivocally to the names of objects (individual concepts).

Because most people resist neologisms — a subject I will discuss in more detail in Part III of this article — it must have seemed preferable to the authors of *ISO 1087* to recommend familiar words rather than neologisms: since “designation” usually refers to concepts rather than to objects, and because “name” typically identifies a single object instead of a concept, it seemed reasonable to stipulate just one meaning for each of these words. By this stipulation, they hoped, apparently, that these two polysemes could become monosemes — at least in the context of Terminology.

However, when they realized that they had (perhaps unintentionally) included name [5.3.1.3] as a type of *designation* [5.3.1] for concepts (based on two or more objects), they decided to resolve this paradox by expanding the meaning of *concept* [3.1] to include not only concepts based on one or two or more objects, but also those based on one — i.e., the names selected for them. In Onomantics, the best way to solve the semantic problem generated by the polysemy of words like ‘name’ and ‘designation’ involves finding unequivocal terms for each necessary concept, even if this means coining neologisms (see note #8). The alternative path of stretching fundamental notions like that of a *concept* will surely, I think, only compound the difficulty.

Incidentally, lexicographers themselves are quite clear about this matter and they make a sharp distinction between concepts and objects — see the discussion of “terms” vs. “names” following Schedule II above. Let me amplify that discussion by noting that in the *Oxford English Dictionary* one may find “London” as part of some fixed phrases (e.g., london clay, london lady, london purple, etc.) and in coinages like ‘londonesque’ or ‘londonize,’ but there is no separate entry for London as the name of a city. By contrast, in *Webster’s* (1991) [but not W3], names are entered and capitalized, but these entries do not contain definitions of concepts — instead they provide some information that identifies the persons or places they name.

In general, we classify and use concepts nomothetically in the organization of knowledge as in theories and hypotheses. By contrast, objects are listed, idiographically, and they are found in case studies and descriptive narratives. Textbooks and scientific findings are based on concepts arranged systematically, but telephone directories, gazeteers, Who’s Who’s and chronologies contain lists of named objects. The former can be developed onomantically, while the latter are analyzed onomastically.

The definitions of “concept” and “designation” found in *ISO 1087* blur this fundamental distinction.

If terminologists would use *designation* (c-tag) to include only terms and symbols that represent general concepts, but exclude names (noms) that identify objects (individual concepts), then Onomantics could abandon “cue” in favor of a more familiar word like “designation”. However, if terminologists insist that names are a type of designation and therefore must represent concepts, then we need a different word, like ‘cue’, to distinguish the designators of (general) concepts from the names of objects⁹.

To summarize, in Onomantics, concepts are represented by descriptions (texts) and cues (short expressions); whereas in Terminology concepts have “definitions” (which, by definition, include links with related concepts) and “designations” (which exclude concept descriptions but include names of objects). I will not say this is “wrong” but I do claim that it produces non-onomantic results — i.e., a way of thinking that is not based on the representation of concepts.

Let us now turn to the two types of “cue” recognized in Onomantics: *c-tags* and *notations*. They can be compared with the “terms” and “symbols” recognized in Terminology.

{1.2.1} Tag

A. The Notation. The notation for ‘tag’ (or c-tag) is {1.2.1} and that for ‘term’ is [5.3.1.2]. This classes each as one of the major forms of “cue” {1.2} and of “designation” [5.3.1]. Its notation puts ‘term’ at a lower hierarchical level in Terminology than ‘c-tag’ in Onomantics. However, both are major items in the taxonomy of succinct forms of concept representation. The differences between them become clear when one looks at their definitions (descriptions).

B. The Description. The definition of [5.3.1.2] *term* given in *ISO 1087* resembles that for “c-tag” {1.2.1} in Onomantics. However, the inclusion of “linguistic expression” imposes a false limitation since concepts can be represented by non-linguistic symbols as well as by words. Consider, for example, the alphanumeric codes used for chemical concepts, e.g., H₂O, or the symbols used for “plus” (+), “minus” (-), decimal point (.), ampersand (&) and at (@). No doubt most c-tags are, indeed, linguistic expressions, but sometimes symbols are also used to represent concepts. Consequently, we may say that some, but not all, c-tags are “terms”. Tags include symbols as well as linguistic expressions — why should “terms” exclude them if they are intended to embrace all the forms used to represent a concept?

A further complication arises because the definition for “terms” [5.3.1.2] includes a distracting stipulation limiting terms to linguistic expressions “in a special language”. Since the definition of “symbol” [5.3.1.1] does not mention “special language” one has to wonder if

the glossators actually intended to restrict the application of “terms” to special languages while letting “symbols” designate concepts in both special and general languages. In Onomantic usage, concepts can be represented in any kind of language although, obviously, more care is required when using both terms and symbols in special languages.

C. Tag. Unfortunately, there is another problem with term. As used by lexicographers, this word refers to any word, phrase, or affix that is a lexeme and, accordingly, should head a dictionary entry — see the discussion following Schedule II. Terms, in this sense, are almost always polysemic as anyone who looks at a general dictionary can easily see: ‘term’ itself is a polyseme whose dictionary entry reports almost a score of meanings. To use “term” for a designator that represents a specific concept (as specified in [5.3.1.2]) is to stipulate an unusual meaning for the word.

Like the new meaning given to “definition” [4.1], as noted above, this stipulation adds to the number of meanings of a word often used in the same discourse community to mean something else — this makes it equivocal. If terminological usage were always separate from lexicographic usage, ambiguity might be avoided. However, the two fields overlap at many points and it is difficult, therefore, to keep the semantic meaning of a lexicographic term (lexeme) clearly separate from its terminological use to mean a designator (c-tag).

{1.2.2} Notation

A. The Notation. As noted above, the location of [5.3.1.1] “symbols” in *ISO 1087* shows that the notion is viewed as one of three forms available to designate concepts [5.3.1]. However, the criteria for identifying a “symbol” are formal, not functional: they fail to identify the fundamental distinction made in Onomantics between representing concepts by a short expression (c-tag) and by a systematizing symbol (notation). The definition for “symbol” [5.3.1.1] identifies it as a non-linguistic form by contrasting it with “term” [5.3.1.2] which is defined as a type of “linguistic expression”. It even fails to mention its most important characteristic: locating concepts in a system.

The non-linguistic property of symbols is basic for lexicographers who cannot write entries for symbols (as noted above following Schedule II) but it is irrelevant for terminologists because symbols can be used not only in notations but also in c-tags. When terminologists select a form to serve a purpose, they need not worry about the type of form to be used. By contrast, when lexicographers choose items to enter in a dictionary, the forms they take determine their treatment. In short, the notations used in *ISO 1087* reveal that the gloss for *symbol* [5.3.1.1] expresses a formal distinction that is fundamentally different from the functional characteristics specified in the onomantic gloss for notation {1.2.2}.

B. The Description. These conclusions are supported

by the definitions provided in *ISO 1087*. Symbols are defined, essentially, as non-linguistic forms, like A, B and C, or 1, 2 and 3. No doubt, notations typically take the form of symbols, but many symbols (as noted above) also represent concepts. This means that symbols can be used both as c-tags and notations.

To clarify this relationship, consider two formal categories: A (terms as linguistic expressions) and B (symbols as non-linguistic items). Now sub-divide symbols into two classes, A1 (cardinal symbols, like 2=two) and A2 (ordinal symbols, like 2=second). Next, think of the contrast between M (c-tags, as designators of concepts) and N (notations, as pointers to the location of a concept in a system). We can then say that:

M = A + B1 — c-tags may be linguistic (terms) or non-linguistic (cardinal symbols)

N = B2 — notations are always ordinal symbols

Consider that, in their written form, numbers can be read in two ways: “1” may mean “one” or “first”; “2” can mean “two” or “second”, etc. One sense of every symbol is *cardinal* and a second sense is *ordinal*. The same distinction applies to letters of the alphabet, even though they are pronounced the same way when used cardinally or ordinally. Consider that, in a notation scheme, “A” may represent the first item in a list, whereas the same letter can also be used to represent an article, its shape, a chemical element (angstrom) or it may be an abbreviation for “answer” or “ampere”. Similarly, “H” can mean the 8th item in a list, the shape of a beam, or Hydrogen. Only when “H” is used ordinally to mean the eighth item in a set can it appear as a notation (or part of a notation). In its other (cardinal) senses, by contrast, “H” can be a c-tag (term) for a concept. The same is true of numbers and alphanumeric combinations. In this article, {1.2.1} and [5.3.1.1] are notations written with symbols, but the same symbols can also be used to tag concepts.

From an onomantic point of view, it is both useless and obvious to identify symbols as non-lexical signs. What is essential is that the relations between concepts in a system of concepts should be identified, and that is what notations do by means of *ordinal symbols*. The fact that both lexemes and *cardinal symbols* are used as c-tags is, no doubt, true but unimportant onomantically — the function they perform when representing concepts is decisive. The distinction made in *ISO 1087* between “terms” and “symbols” fails to make this point.

As noted above, after Schedule II, the lexical distinction between words that can be spelled/alphabetized and symbols that cannot is decisive, but this is not an important point in Onomantics and, I think, in Terminology also. It is, of course, a fundamental lexicographic distinction because dictionaries offer entries for terms (linguistic units) but not for symbols.

C. The Tag. All the dictionary senses of “symbol” include the point that symbols represent something but none of them point to the ordering function of notations. Nevertheless, the systematic relations between concepts is often mentioned in Terminology as an essential feature.

How should such relationships be indicated? Admittedly, “notation” is a polyseme with several meanings: among documentalists, it refers both to a classification scheme and to code “numbers” in such a scheme. In the usage presented in {1.2.2} each notation designates a concept and only one concept and it also places that concept in the framework of a system of concepts.

This is not to say that terminologists have no interest at all in the various forms that can be used to represent concepts. When choosing between the different forms that might be used to represent a concept, for example, it may be quite important to recognize that some forms will be more acceptable and less ambiguous than others. This consideration leads me to think that a separate category in *ISO 1087* ought to be set aside for the identification of various available forms such as words, phrases, affixes, symbols, and graphics, plus the relevant semantic notions such as polysemy, monosemy, homophony and synonymy.

However, as noted in Part I, I think such information ought to be presented separately as a set of borrowed concepts in which definitions taken from existing dictionaries would be used in place of new concept descriptions that, as illustrated in *ISO 1087*, often stipulate new and confusing meanings for these words. In such a context, it would be relevant to point out that *ordinal symbols* are non-linguistic forms that can be used to place concepts in a system of concepts. By contrast, of course, lexemes and *cardinal symbols* are used to represent a concept succinctly (i.e. without describing it) and texts (but not sentences) are used to describe concepts by specifying their essential characteristics.

To conclude, I believe that all of the three types of *designation* entered in *ISO 1087* at [5.3.1.1/3] are essentially incorrect and ought to be replaced by different concepts and c-tags. Perhaps I should stop here. However, much more can and needs to be said to establish, more broadly, the important differences between Onomantics and Terminology. In Part III of this project, I will discuss them under three main headings: the format of a gloss, the borrowed vocabulary of Terminology; and some missing concepts needed by terminologists. In conclusion, I will speculate about the main reason why Onomantics and Terminology are so different.

Notes

1. The core concepts needed in Onomantics, as described in Part I of this article, are reproduced here for easy reference, they are repeated in this note:

SCHEDULE IA: Core Onomantic Concepts

{1} any form used to identify units of nomothetic knowledge: *concept representation; representation*

{1.1} a representation {1} that specifies the essential characteristics of a concept: *concept description; description*

{1.2} a representation {1} that succinctly identifies a particular concept: *concept cue; cue*

{1.2.1} a cue {1.2} that identifies a general concept without reference to how it may be linked to other concepts: *concept tag; tag*

{1.2.2} a cue {1.2} that identifies a general concept as part of a system of concepts: *concept notation; notation*

SCHEDULE IB: The Key Cues ("Terms")

concept representation: {1}

description: {1.1}

cue: {1.2}

tag: {1.2.1}

notation: {1.2.2}

In any Onomantic context, 'cue' should be understood as a short form for 'concept cue,' and 'tag' as short for 'concept tag.' This caveat is needed because, of course, these words — like many others drawn from ordinary language — are polysemes which already have other meanings. If we think of a concept as an idea most fully and adequately represented by a description (definition), then any word or phrase that can be used for that concept is a kind of "tag," something added on to identify the tagged item. Apart from its everyday meaning as something attached to a suitcase to identify its owner, we know that a speech can end with a summarizing "tag" or a tag may refer to a final quotation, or the moral of a fable.

The word also has special meanings in Lexicography and Computer programming. Dictionary entries often contain labels or "tags" that indicate a field of study in which the defined word has a special meaning: e.g., Chemistry, Logic, Sports, etc. Computer programmers use "tag" (or "sentinel") to mean a symbol (like < and >, or "...", or &...) that can mark the beginning and end of an item of information or text.

More recently, "tag" has gained widespread acceptance, because of the INTERNET and World Wide Web, as a term standing for the markup directives or special instructions found between angle brackets in the coding system of the Hypertext Markup Language (HTML) and related schemes like SGML, MARTIF, etc. The increasing use of INTERNET and WWW to post terminological information means that this new meaning of "tag" will become increasingly familiar. However, as yet it has no special meaning in Terminology although, of course, terminologists make extensive use of computers and hence need to use 'tag' in that context.

However, modifiers can easily be used to distinguish between the different senses of "tag" whenever ambiguity is possible. In the Onomantic context, "concept tag," as listed above, is appropriate — ore-tag for short. Perhaps some phrase like "markup tag" could be adopted to overcome possible ambiguity when the same word is used in HTML, and "sentinel" appears to be preferred to "tag" in this word's earlier computer programming sense. So long as the different senses of any word can easily be distinguished clearly from each other by contexts and modifiers, no difficulties need arise from their use as polysemes and, of course, so long as, within each subject field (discourse community) a word has only one meaning, it is unequivocal and, therefore, can be used without ambiguity in that field.

2. These three concepts overlap those identified in the well-established triangle of meaning developed by Ogden and Richards and others. In the detailed analysis subsequently offered by John Lyons in *Semantics*, the triangle includes three basic elements — to follow this discussion, please first draw a triangle and identify their points as A, B and C.

A. signs (terms, tags, or c-tags)

B. concepts (descriptions, definitions, connotations, intensions)

C. significata (referents, denotations, extensions, objects)

Here I do not discuss the referents of a concept, but they are the objects (significata) whose shared properties constitute the essential characteristics of a concept. A description of these characteristics constitutes the intension (connotation) of a concept, and a tag (c-tag, sign, term) provides its designation. Lyons identifies each concept with its description (definition) but in my usage, concepts can exist independently of their representation, perhaps in our

minds as subjective "conceptualizations" that take a more concrete form when we start writing about them.

Communication about or using a concept becomes possible, therefore, only as we talk about it, as it becomes designated, whether by A or B — and, perhaps, by examples (extensions) C. The referents (objects, significata) of a concept typically provide the foundation or basis for creating it by means of thinking or knowing. However, since Lyons' book is about semantics, he starts with words (A, signs, terms, tags) and deals only with their *signification* as they point to the concepts (B) represented by texts (descriptions or definitions) and point to (C) objects (significata, i.e. that which is signified).

"Definitions" normally refer to the A to B relation (from signs to their significations). Lexicographically and logically, this involves proceeding from a definiendum to its definiens. In the semantic context, signs are signifiers and we look for the various concepts (B, intensions, significations) they signify and the referents (C, extensions, significata) they refer to. Symbolically, this means going from A to B to C.

By contrast, the onomantic perspective reverses this direction: it goes from C to B to A. It moves from the source of concepts (C) — normally, if not always, objects and their properties — to concept descriptions (B, definitions) and only subsequently to their *representation* (A, designations). In the onomantic context, concepts originate in our minds as units of knowledge that can then first be described (B) and then designated (C). Inge Dahlberg made essentially the same point in 1978, in an article published for the INTERCONCEPT project. It helped to lay the foundations for the subsequent development of the INTERCOCTA methodology. In her schematization, using a somewhat different vocabulary, she speaks of:

predication as a process of generalizing from items ("referents," objects, actions) to establish concepts (i.e., from C to B);

designation as the movement from concepts (characteristics, concept descriptions) to the verbal forms (terms, c-tags) used to represent concepts (i.e., from B to A); and

denotation or the return flow from designators to referents (i.e., from C to A) (Dahlberg 1978, pp. 2-3; somewhat revised in Dahlberg, 1995, p.11).

The vocabulary used in Dahlberg's article differs from what I propose above, and the points of the triangle are re-arranged and assigned different letters in the Dahlberg treatment, but the essential meaning, I think, is the same.

The semantic triangle makes no provision for *notations*, but this is not surprising since they link concepts with each other and do not establish the meaning of any concept taken by itself. However, we can easily add a fourth feature (D, notation) to any concept that can be conceived of as an item in a system of concepts. No doubt many concepts are conceptualized as independent ideas not linked with any others — consequently they lack notations. However, in specialized fields of knowledge, concepts are normally interdependent and need to be structured as a system. Notations are a widely available tool that can facilitate the specification of a concept's relationships to other concepts.

Visually, we could depict notations as a point embedded within the triangle of meaning, i.e., as a centered D linked to its three points, A, B and C. They are needed to systematize concepts. The D (notation) provides links to other concepts belonging to the same system. We might depict it in a third dimension — like a May pole standing upright on a plane surface. It could be linked by streamers (linkages) to other poles marking related concepts (triangles) resting on a plane surface.

Since notations are variable and change with each revision of a conceptual scheme (as illustrated by the various proposed revisions of *ISO 1087*), it might be helpful to use "X" (a variable

symbol, instead of “D,” an invariable symbol) to represent concept notations that may often change for different contexts. With the multi-hierarchical classification schemes facilitated by computerization, we can imagine how several notations systems (X, Y, Z, etc.) for any given concept could help readers place it in a variety of systematic relationships.

3. We need a generic concept to identify the constituent parts of a *glossary*, whether they be semantic entries, onomastic records or some mixture of both. Using *gloss* for this concept is, admittedly, a neologism but I think it is justifiable and quite easy to remember. Etymologically, glosses were originally notes used to explain an obscure text, and we still use the word in this sense. However, when a set of glosses were compiled into a separate text, the resulting compilation was called a glossary and the word came to be used for any set of notes (including entries and records) that provide information about unfamiliar words or concepts.

Semantic *entries* define the headwords entered in an alphabetical glossary or dictionary. By contrast, the onomastic *records* found in a conceptual glossary are usually arranged in a systematic way, i.e. by notations, as they are in *ISO 1087*. The word, *gloss*, when used to mean any item of information glossed in a glossary — whether it be a lexeme (entry) or a concept (record) — can help us clarify an often confusing pair of closely related ideas and it also enables us to avoid repeating “entry or record” whenever it is not important to distinguish between them.

Admittedly, “entry” and “record” are polysemes with other senses so readers are urged to notice the specific meanings assigned to them here, in an onomastic context. If their other meanings block recognition of these special meanings, please think of preferable terms and recommend them to all of us — the distinction is fundamental regardless of what one chooses to call it.

4. Henry Burger's *Wordtree* is an exceptional dictionary because, by defining every transitive verb by means of two other transitive verbs, it establishes comprehensive chains of interdependent concepts: for example, *lexiconize* is defined as “lexify and roster”; *lexify* as “semanticize and systemize”; *semanticize* as “intend” and “sensify”; etc. The rule that dictionaries have independent definitions is tested by this exception. I might add that Burger supports his claim that none of the words defined in the *Wordtree* are neologisms by providing citations to published texts for all of them. By contrast, most of the words used in the definitions found virtually all other dictionaries are intended to be understood without the need to consider other definitions, but there are exceptions: for example, the definition of *synonym* typically has a cross reference to *antonym*. However, genus and species are likely to be used, reciprocally, in the definitions of these words, without cross-references — i.e., to understand the definition of “genus” lexicographers will assume their readers know what a “species” is, and vice versa. By contrast, in interdependent definitions, such words should be entailed so that the description of a concept called “genus” would automatically show where to find the description of a linked concept called “species”.

5. See note No.5 in Part I of this article in which I argue that including objects (and their individual concepts) within the scope of Terminology undermines the useful distinction between Onomastics and Onomastics. In situations where problems involving both the naming of objects and the representation of general concepts need to be considered, a cross-disciplinary methodology using concepts from both fields could be used. However, no attempt is made here to introduce concepts drawn from Onomastics. From an exclusively onomastic perspective, all cues (designations) refer to general concepts, not to objects (or their “individual concepts”).

6. John Lyons gives us a thorough semantic analysis of the role of *names* of objects (individual concepts) as distinct from the signs

(terms, c-tags) used for general concepts. He writes, in a section of his book on “Naming,” that “the relation which holds between a proper name and its bearer is very different from the relation which holds between a common noun and its denotata [referents]” (Lyons, 1977, I: 216). While admitting that some philosophers of ordinary language, including Wittgenstein, Ryle and Austin, have criticized this distinction, it remains unquestioned, he writes, in many works on semantics.

However, Lyons does mention a common use of “name” to mean designation, traced to Biblical usage as when Adam “named” animals so that “whatsoever the man called every living creature, that was the name thereof” (Genesis 2.19). Nevertheless, “proper names,” according to Lyons, “identify their referents, not by describing them in terms of some relevant property or properties which the name denotes, but by utilizing the unique and arbitrary association which holds between a name and its bearer” (p.214). No doubt, there are marginal cases: when someone is called “Junior” this probably means that he bears the same name as his father, but a girl called *Rose* is not a kind of flower, nor is Sarah a princess. Lyons’ point is that designers identify properties of something, but names do not.

In a recent paper, Dahlberg discusses statements that can be made about the Liberty Bell in Philadelphia, and bells in general, characterizing the former as an individual concept and the latter as a general concept (Dahlberg, 1995). She would agree, however, that “Liberty Bell” is a name (capitalized) applied to a single object (“individual concept”) and “bell” is a term (c-tag) applied to a (general) concept.

The issue cannot be resolved here, but I shall follow Lyons in treating names as arbitrarily chosen expressions that identify but do not characterize an object (or “individual concept”) and using designations (terms, c-tags) to characterize general concepts only — the description of these concepts do characterize the referents to which they apply, something that names do not. Of course, sometimes names are chosen in the hope that they will, indeed, characterize the object (person) named, but such hopes are often frustrated: thus a girl named ‘Charity’ or ‘Faith’ may grow up to be uncharitable or faithless.

7. Terms are *equivocal* when, within the same special language (discourse community) they have two or more meanings. By contrast, they are *unequivocal* when they have only one meaning within such a community. I consider this concept necessary for Onomastics, but unnecessary for Lexicography where, by contrast, a lexeme is *polysemic* if it has more than one meaning, as reflected in the various sense definitions assigned to an entry word in a single entry. Clearly, a term (c-tag) can be polysemic and also unequivocal in the context of a special language. ISO 1087 contains an entry for “polysemy” but not for “equivocalness”. The reasons for this and its consequences are examined in Part III of this article.

8. If, as I argue here, both ‘name’ and ‘designation’ are sometimes used equivocally to refer either to (general) concepts, or to objects (individual concepts), it might help clarify the problem to introduce new terms that are unequivocal: e.g., *tag* (“c-tag” or “concept tag”) for cues that represent only general concepts (see {1.2.1}); and *nom* for expressions that identify a single object. ‘Nom’ is a loan word from French that has already come into English in such phrases as *nom deguerre* and *nom deplume*. Etymologically, it can be traced, like ‘name,’ to the Latin word, ‘nomen.’ A ‘mis-nomer’ is a wrong name, and ‘Onomastics’ comes from the Greek form of the same word, *onoma*. We could, I believe, use “nom” to mean only the name of an object, and (concept tag) or “tag” to designate only general concepts. In similar fashion, we could take *conom* from the Greek root of Onomasiology to stand for a generic concept that includes both noms and c-tags — i.e. the items treated in both Onomastics and Onomastics, both individual and general concepts.

Armed with this vocabulary, we could point out that “name” is normally used in English to mean “nom”, but it is sometimes also used for “tags” (as in Genesis, 2.19 — see note #6); and “designation” usually refers only to “c-tags,” but sometimes it also includes “noms”, as in [5.3.1 / 5.3.1.3]. Both of these words, therefore, are equivocal in Terminology. No doubt introducing *tag* and *nom* will be difficult, but if they could be accepted by terminologists, they would provide a simple way to explain why both name and designation are used so confusingly in *ISO 1087*.

As for *individual concept*, it may well be useful in philosophy and classification, but is it necessary in Terminology? Although some philosophers of language, like Wittgenstein, Ryle and Austin, use this term and concept, others like John Lyons (see note #6) reject it. Because of its focus on general concepts, Onomastics does not need it and, I think, even Onomastics ignores it, preferring to name objects as “objects,” not as “individual concepts”. Similarly, I think, Terminology might be better off by disregarding the notion.

9. Consider that one may transliterate the name of an object but one cannot translate it. Thus Calicut became Calcutta in English usage, and Frankfurt can be spelled the same way in both languages. However, products named for a place can be translated or transliterated: the fabric, “calico,” is named for its city of origin, as a transliteration, but it may also be translated as “cotton cloth”. A particular kind of sausage may be called, by transliteration, a “frankfurter” but many Americans translate this concept by using the phrase, “hot dog”.

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