

Context as Other Minds

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The Pragmatics of Sociality,
Cognition and Communication

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For Linda and Nathaniel

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Preface

In the forty-odd years since the publication of Austin's *How to Do Things with Words* (1962), pragmatics has proven itself to be in equal measures indispensable and frustrating. Indispensable because almost every facet of our construction of reality, most conspicuously in matters of culture, sociality and communication, turns out to hinge upon some contextual pragmatics. Frustrating because almost every encounter one has with context opens up to the slippery slope of relativity, thus sooner or later to the triumphant crowing of the absolutists, who insist that because nothing is 100 percent context-free, everything is 100 percent context-dependent; and that a systematic, analytic investigation of mind, culture and language is therefore hopeless, indeed misguided.

One task pragmatics is yet to measure up to, it seems, is how to account, in a principled way, for the organism's amazing propensity for stabilizing its frames, so that the appearance — or illusion — of firmament, of a stable reality, always emerges in spite of the ubiquity of contextual flux. This is indeed an evolutionary issue of the highest order, sitting as it is at the very crux of adaptation and survival.

The non-objective nature of "context", the fact that the frame around the picture is construed for the occasion through a ubiquitous if still mysterious judgement of "relevance", has been conceded by pragmatists from Lao Tse to Aristotle to Kant to, more recently, Sperber and Wilson (1986). But affirming that "context is a mental construct" only opens up a vast research agenda — how to describe the organism's adaptively-successful framing of reality. That is, how to account for the fact that those organisms who select particular frames thrive, but those who insist on viewing reality via other frames — in principle just as "legitimate" or "valid" — perish. To this day, the challenge of elaborating the neuro-cognitive — thus ultimately evolutionary — mechanisms via which contextual framing exerts its ubiquitous control over what is, to paraphrase Kant, "real to us", remains largely unanswered.

Almost from the moment my *Mind, Code and Context* (1989) came out, indeed even before, I knew — to my sorrow — that the book fell woefully short of my own expectations. Something was missing, something vital and pivotal, whose absence made it impossible to generalize from the pragmatics of individual cognition to the pragmatics of sociality and communication. The bridging principle was not there, the one that would connect first-order framing of 'external' reality, second-order framing of one's own mind, and third-order framing of other minds. That bridge, I believe, can be found in the work of the last two and a half decades — beginning with Premack and Woodruff (1978) — on so-called "Theories of Mind". With the bridge in place, the pragmatics of sociality and communication can now be re-formulated in terms of one's mental models of the mind of one's interlocutor or collaborator, a reformulation that is surely implicit in Grice's "maxims" (1968).

What I have attempted to do here is re-position pragmatics, and most conspicuously the pragmatics of culture, sociality, and communication, in a neuro-cognitive, bio-adaptive, evolutionary context. This is indeed a tall order, and the book is thus, inevitably, only an opening sketch. It begins with a compressed intellectual history of pragmatics (ch. 1). The next two chapters deal with the construction of generic — lexical-semantic — mental categories, primarily thus with 1st-order framing of “external” reality. Chapter 2 treats the formation of generic mental categories, that is with what cognitive psychologists know as “Semantic Memory”. It outlines the prototype-like nature of mental categories, showing them to be an adaptive compromise between conflicting but equally valid imperatives: rapid uniform processing of the bulk, and contextual flexibility in special cases that are highly relevant. Chapter 3 elaborates on the network — nodes-and-connections — structure of semantic memory. Within this framework, the metaphoric extension of meaning is revisited, and the contextual-adaptive basis for metaphoric language is reaffirmed.

Chapter 4 outlines the core of the book, the interpretation of “communicative context” as a systematic on-line construction of mental models of the interlocutor’s belief and intention states. Within this context, grammar is shown to be a pivotal instrument for automated, high-speed information processing. It is argued that mental models of the interlocutor’s epistemic and deontic states are constructed rapidly on-line during grammar-coded human communication. The theoretical underpinnings of this approach to grammar, the so-called “Theories of Mind” tradition, is surveyed from an evolutionary perspective. Three subsequent chapters flesh out this adaptive approach to grammar, ranging over the three main foci of grammatical structure: The grammar of referential coherence (ch. 5), the grammar of verbal modalities (ch. 6), and the grammar of clause-chaining (ch. 7).

The last three chapters extend pragmatics somewhat beyond its traditional bounds. Chapter 8 sketches out the close parallels between the pragmatics of individual cognition (epistemology) and the pragmatics of organized science (philosophy of science). In the latter, the ‘relevant interlocutor’ whose mind is to be anticipated turns out to be the community of scholars. Chapter 9 contrasts two extreme theories of the “self” — one contextual-pragmatic wherein the self is an illusory, unstable multiple; the other of an invariant, centralized, controller self. Two well-known mental disturbances — schizophrenia and autism — are identified as the respective clinical expressions of these two extreme “selves”. The neurological basis for the two disturbances, it turns out, is to be found at two distinct loci of the attentional network. An unimpaired self, it is suggested, must accommodate both extremes, and is thus — much like mental categories — a classical pragmatic-adaptive compromise. Chapter 10, lastly, deals with the contextual pragmatics of the martial arts, whereby one’s every move is enacted in the context of the opponent’s putative current states of belief and intention. The grammar of social interaction thus turns out to recapitulate the grammar of inter-personal communication; or is it the other way around?

In writing this book I have benefitted enormously from the vast knowledge and generous comments offered by many correspondents, colleagues and friends. Their help is acknowledged at the appropriate junctures throughout. Whether they approve of the final product or not, I couldn't have done it without them. Nor could I have done any of it without the tireless efforts of my long-time editor, Kees Vaes. And none of it would have been done without the two people who light up my life, Linda and Nathaniel, to whom this book is dedicated.

White Cloud Ranch
Ignacio, Colorado
August 2004

CHAPTER 1

Perspective

1.1. The conundrum of context*

A context is a psychological construct.

(D. Sperber and D. Wilson 1986: 15)

The de-stabilizing effect of context on the mental construction of reality has bedeviled biological organisms ever since the dawn of evolution, much as it has confounded philosophers and scientists ever since the advent of the study of mind. The relativity inherent in contextual framing can play havoc with the organism's attempt to construct a stable, coherent account of experience. For atomic chunks of reality are but artifacts of their framing, arbitrary time-slices of the experiential continuum. If their frames render them utterly unique, how do we relate them? Or relate to them?

Yes, *that* one there-and-then was 'a snake'. It bit my now-defunct compadre, after which I killed it. Now, *this* one here-and-now — different in color, size and shape — is surely not the same one. Yet it is tantalizingly similar, along the very same dimensions that render it so different. Well, is it or is it not "a snake"? Will it or will it not bite? Will its bite be lethal? Should I kill it?

But the very same aspect of context, its maddening elasticity, has also made it possible to relate unique time slices of experience to each other by tagging some as tokens of the *same type*. Soon, relatively firm islands of similarity are extracted from their ever-fluxing context, gradually assembled into a body of seemingly stable knowledge.

So, this one here-and-now is not the same one as that one then-and-there. In some absolute sense, therefore, it is neither a proven "snake" nor a sure-fire killer. Yet it is my construed contextual differences between the two would-be "snakes" — color, size, shape, space-time coordinates — that let me to extract their similarities. Likewise, the very same cylinder when observed from one perspective looks like a rectangle, from another like a circle. How do we know to ignore such radical differences and decide that the two observations represent the very same object?

This feat of extraction, or abstraction — ascribing the variance to the frame, construing the similarities as an invariant picture — is what makes contextual framing biologically indispensable. For what is extracted is not any good old invariance or similarity, but only those similarities that have proven *adaptively relevant*.

But the core gambit of pragmatics — selecting the relevant frame — is also the source of its ancient conundrum. For it is the act of framing that accounts for both the flux and the invariance of our mental constructs. The challenge facing sentient organisms is how to, somehow, cobble the *right* frame around the picture, set the figure in its *proper* ground, choose an *apt* point-of-view for a description, zoom onto the *relevant* perspective. Such contextual judgements may be logically arbitrary, but

they are adaptively indispensable. The survival of myriad extant species attests to the adaptive validity of old framing choices made by their ancestors; as does the increasing level of stability, automaticity and genetic encoding conferred upon repeatedly-validated framing choices by one's evolutionary forebears.

Likewise, the seeming relativity entailed by that context-dependence of mental constructs is not a matter of principle, to be determined by logic, but an empirical issue to be resolved through the study of the frequency and stability of successful adaptive choices. A reductionist insistence on a forced either/or choice between 'objective' and 'relative' reality is a false framing manoeuvre.

1.2. Russell's paradox

There was only one catch and that was Catch-22, which specified that a concern for one's own safety in the face of danger [...] was the process of a rational mind. Orr was crazy and could be grounded. All he had to do was ask; and as soon as he did, he would no longer be crazy and would have to fly more missions. Orr would be crazy to fly more missions and sane if he didn't, but if he was sane he had to fly them. If he flew them he was crazy and didn't have to; but if he didn't want to he was sane and had to.

(J. Heller, *Catch-22*, 1962: 54)

A picture is not fully specified until it has been framed, but the frame itself remains outside the picture. A figure only stands out vis-à-vis its ground, but the ground is not part of the figure. A map is useless without its scale and coordinates, i.e. without the point-of-view from which it was drawn; but the point-of-view is outside the map. An expression is only meaningful from a given communicative perspective, but the perspective ('I hereby say to you that...') is not part of the expression. These four metaphors of pragmatics are but special cases of the more general — if inadvertent — definition of pragmatics given by Bertrand Russell in his attempt to insulate formal logic from the ravages of recursive framing.

In his *Theory of Types*, Russell (1908) outlined a set-theoretical approach to description, his unintended stand-in for mental representation, that would skirt the contradictory effect of self-inclusion paradoxes, such as the celebrated *Epimenides*:

Epimenides the Cretan said that all Cretans were liars [...]. Was this a lie? (1908: 59).

Referring to similar paradoxes, Russell observes:

In all the above contradictions [...] there is a common characteristic, which we may describe as self-reference or reflexiveness. The remark of Epimenides includes itself within its scope. If *all* classes, provided they are not members of themselves, are members of *w*, this also must apply to *w*. (*ibid.*: 61)

The offending culprit, Russell goes on, are statements about *all* propositions, which must perforce exclude the next statement in the hierarchy of types, the one that affirms the last proposition:

This, however, makes it clear that the notion ‘all propositions’ is illegitimate; for otherwise, there must be propositions [...] which are about all propositions, and yet cannot, without contradiction, be included among the propositions they are about. (*ibid.*: 62)

Russell then outlines his — somewhat ungainly — set-theoretical template of all self-inclusion paradoxes:

In this case, the class *w* is defined by reference to ‘all classes’, and then turns out to be one among classes. If we seek help by deciding that no class is a member of itself, then *w* becomes the class of all classes, and we have to decide that this is not a member of itself, i.e. is not a class. This is only possible if there is no such thing as the class of all classes in the sense required by the paradox. That there is no such a class results from the fact that, if we suppose there is, the supposition immediately gives rise [...] to new classes lying outside the supposed total of all classes. (*ibid.*: 62)

Put another way (T.K. Bikson, in personal communication):

The set of all sets that don’t include themselves, does it or does it not include itself?

What Russell has given us is another version of Goedel’s theorem: A system may be either complete or consistent, but never both. For an entity to be described finitely without succumbing to logical contradiction, a contextual upper bound must be imposed. One must frame the picture and then ignore the frame. One must insist on an arbitrary *closure*.

A system — and thus its description, as Russell’s formal logic purported to be — is by definition a hierarchic entity, made out of a progression of levels each acting as a *meta-level* to the one embedded directly within it. Each meta-level frames some lower level. Within such a system, logical consistency can only be maintained if one disallows switching meta-levels (points-of-view, perspectives) in mid-description. In other words, a logically-consistent, and thus in principle incomplete, description can only operate within a fixed perspective, context, meta-level.

But human mental representation, and language as its most celebrated example, is notoriously replete with constant switching of perspective, with zooming in and out, with repeated acts of re-framing; as is the ‘mental’ representation of all biological organisms. Is human cognition — and natural language, as Russell was inclined to suspect — illogical, contradictory, unequal to the task of representing reality? Have biological organisms since the amoeba been sadly deluded? And how have a billion years of natural selection allowed them to get away with such a monumental folly?

1.3. Objectivism

Now spoken sounds [‘words’] are symbols of affections of the soul[‘thoughts’], and written marks are symbols of spoken sounds. And just as written marks are not the same for all men [‘are language specific’], neither are spoken sounds. But what

these are in the first place signs of — affections of the soul — are the same for all [‘are universal’]; and what are these affections are likenesses of — actual things — are also the same for all men.

Aristotle, *De Interpretatione*

Russell’s fellow logical positivist Rudolph Carnap shared Russell’s low regard for natural language as means of knowledge representation, most emphatically of scientific knowledge. As a self-described *physicalist* (a latter-day species of Aristotelian empiricism), Carnap was only interested in a language that could be defined in terms of observables:

The thesis of physicalism, as originally accepted in the Vienna Circle, says roughly: Every concept of the language of science can be explicitly defined in terms of observables; therefore every sentence of the language of science is translating into a sentence concerning observable properties. (1963: 59)

Carnap’s very definition of pragmatics — and by inference of context — thus relegates it to the domain of empirical observation, i.e. the objective context:

According to present terminology, we divide the theory of language (semiotics) into three parts: pragmatics, semantics and logical syntax. The descriptive concepts mentioned belong to pragmatics; logical analysis belongs either to semantics (if referring to meaning or interpretation) or to syntax (if formalized). (1950: 432)

Though the ‘objective’ frame may also be *language use*:

If in an investigation an explicit reference is made to the speaker, or, to put it in more general terms, to the user of the language, then we assign it to the field of pragmatics. (*ibid.*; cited from Morris 1963: 88).

In his later reflections, Carnap rued the split in 20th century analytic philosophy between philosophy of language and formal logic:

Only slowly did I recognize how large the divergence is between the views of the two wings of analytic philosophy in the question of natural language versus constructed languages: the view which I share with my friends in the Vienna Circle and later with many philosophers in the United States, and the view of those philosophers chiefly influenced by G. E. Moore and Wittgenstein [. . .] In the Vienna Circle mathematics and empirical science were taken as models representing knowledge in its best, most systematized form, towards which all philosophical work on problems of knowledge should be oriented. By contrast, Wittgenstein’s indifferent and sometime negative attitude towards mathematics and science was accepted by many of his followers, impairing the fruitfulness of their philosophical work. (1963: 68–9)

And in an observation reminiscent of the idealization common to Plato, Saussure and Chomsky, Carnap consigns pragmatics to the domain of empirical investigation:

The analysis of meanings of expressions occurs in two fundamentally different forms. The first belongs to *pragmatics*, that is, the empirical investigation of historically given *natural languages*. This kind of analysis has long been carried out by

linguists and philosophers, especially analytic philosophers [...] The second form was developed only recently in the field of symbolic logic; this form belongs to *semantics* (here understood in the sense of pure semantics, while descriptive semantics may be regarded as part of pragmatics), that is, the study of constructed *language systems* given by their rules. (1956: 233)

Pragmatics is grudgingly conceded a useful role:

Nobody doubts that the pragmatic investigation of natural languages is of greatest importance for an understanding both of the behavior of individuals and of the character and development of whole cultures. (1956: 234)

But for Carnap pragmatics remains a means to an end, subservient to the goals of formal semantics:

Many of the concepts used today in pure semantics were indeed suggested by corresponding pragmatical concepts which had been used for natural languages by philosophers or linguists, though usually without exact definitions. (1956: 234)

It is perhaps ironic that in imposing his constraint on formal descriptions — no perspective-shifting in mid-description — Russell, in a wave of his magical wand, exorcized the specter of pragmatics out of deductive logic. This intellectual gambit yielded two results, the first intended, the second perhaps not:

- Deductive logic was rescued as a closed, internally-consistent system.
- Deductive logic was removed, once and for all, as serious contender for modeling, describing or explaining language and mind.

Put another way, Russell saved the instrument by giving up on its historic purpose. His (and Carnap's) nemesis, Ludwig Wittgenstein, accomplished much the same in his *Tractatus* (1918), pointing out that the propositions of logic can be all reduced to either tautologies or contradictions. That is, they are purely analytic and thus in principle not capable of representing human knowledge, scientific or otherwise:

The propositions of logic are tautologies. Therefore the propositions of logic say nothing. (1918: 121)

This throws some light on the question of why logical propositions cannot be confirmed by experience any more than they can be refuted by it. Not only must a proposition of logic be irrefutable by any possible experience, but it must also be unconfirmable by any possible experience. (*ibid.*: 127)

Hence there can *never* be surprises in logic. (*ibid.*: 129)

Given Carnap's program of making formal logic the proper instrument for representing scientific knowledge, neither Russell nor Wittgenstein should have rendered him much comfort. For where there is no surprise, there's no information (Shannon and Weaver 1949; Attneave 1959). Closed systems are just that, immune to the accretion of knowledge. The open-ended pragmatics of framing and re-framing is the only venue through which organisms can increase their knowledge base. As we shall see further below (ch. 8), the same turns out to be true of organized science.

1.4. Relativism

It is easy to see now why pragmatics could be, and often has been, taken as license for unbridled relativism. If mental representation is but a process of framing and re-framing, objective reality ceases to be an issue. Since context is a subjective construct, constrained neither by logic nor by reality, in principle then anything goes. For reality is but a whim of the observer–framer, an artifact of arbitrarily chosen perspective. The spread of relativism in the 20th century into various academic disciplines presumed direct descent from the pragmatic philosophy of Kant, Peirce and Wittgenstein.

As elsewhere, the rejection of one brand of extreme reductionism often spawns its equally extreme and just as reductive converse. This is a sad fact in the history of philosophy and science, as well as an ancient logical trap, the notorious mis-construal of the one-way conditional:

B \supset A
therefore
A \supset B

But of course, A could just as well entail C, D or Z. One needs to remind oneself that logical necessity and/or objectivity are not necessarily the overriding issue. A perspective that is logically arbitrary may still be *adaptively unimpeachable*. And it is this adaptive motivation that has stabilized — objectivized — our Newtonian universe of time and space, sizes and colors, boundaries and shapes, gravity and inertia, motion and action.

If there is anything Relativity and Quantum Mechanics have taught us, it is that the Newtonian universe is objective only from a given perspective. But this perspective just happens to be the one most relevant to the adaptive needs of biological organisms. Logically, this perspective may be a mirage. But it is a stable mirage within which reliable, consistent survival bets can be made — and on the whole won — by large populations of countless species.

The reality, solidity, velocity and weight of the bus coming down the street is not a question of logic but a matter of survival. And, it just so happens, the relativistic organisms that refused to construe the bus as real did not live to tell the tale, nor have they left any descendants to perpetuate their relativism-prone genome. Natural selection has been, since the dawn of evolution, the ultimate arbiter of ‘reality’. It testifies, vividly and conclusively, to the adaptive validity of some theories of ‘reality’ and the adaptive bankruptcy of others.

1.5. Other minds

While Bill, if he is in pain, has every right to say that Bill is in pain, Arabella has not, because she is in pain[,] the right to say [that] Bill is in pain.

(J. Wisdom, *Other Minds*, 1956: 227; brackets added)

[. . .] we contrasted two cases of doubt as to whether a certain man, Smith, say, believes that flowers feel, namely (1) a case of *natural* doubt arising because the doubter knows only that Smith had once at a party said, “I believe flowers feel”, and thinks Smith might have been saying this for the sake of something to say; and (2) a case of *philosophical* doubt arising because the doubter knows only *outward* signs of Smith’s *inward* state, and feels that from these he can never be sure what that state is.

(J. Wisdom, *ibid.* 1956: 1)

In an earlier foray into pragmatics as a meta-discipline (*Mind, Code and Context*, 1989), I took it for granted that two related features stood at the core of pragmatics, and thus at the core of the evolutionary adaptation called ‘cognition’:

- the construal of logically-arbitrary but adaptively-relevant frames;
- the consequent context-dependence of all framed ‘reality’.

Taken together, the two certainly characterized the successful behavioral gambits of individual organism in their struggle to adapt to their inanimate physical environment. Out of the myriad random stimuli emanating from the ‘real’ environment, evolution has taught biological organisms — gradually, painstakingly, through numerous detours, cul-de-sacs and oft-lethal trials and errors — to selectively attend to, internally represent, and then respond to only a minuscule sub-set of stimuli, those that were deemed adaptively relevant in specific contexts.

While my old assumptions are, strictly speaking, still valid, they leave a major component of the evolutionary rise of human cognition, culture and communication outside the scope of the discussion — *context as the construal of other minds*. For the survival of social species is, by definition, predicated on cooperation and communication, and both of those are immensely dependent on access to — or at least the successful construal off — the interlocutor’s mental states of belief (‘knowledge’) and intention (‘predisposition to act’).

The mental construal of the mind of the other has, of course, been implicit in all works on communicative pragmatics. Even the most logic-bound treatments of ‘intensional logic’ (Carnap 1956), ‘definite description’ (Geach 1962; Strawson 1964; Donellan 1966), ‘presupposition’ (Keenan 1969, 1972; Gazdar 1979), ‘conversational implicatures’ (Grice 1968/1975; Levinson 1983) or ‘presumptive meaning’ (Levinson 2000) are suffused with assumptions about the mind of the other.

Likewise, although my own earlier explorations of grammar-coded human communication (e.g. Givón 1989, 2001a) has often been couched, oft implicitly, in terms of other minds, I have often failed to acknowledge explicitly the absolute centrality of mental models of other minds to a realistic account of human cognition and communication. For the mental representation of other minds turns out to be the most ubiquitous and systematically-exploited facet of context in social interaction and communication. I hope this book goes some distance in redressing the balance.

The quotes from John Wisdom, above, are of course entertaining. But their profound, indeed endearing, empiricist reticence continues to haunt the discussion of mental models of other minds. In the burgeoning literature on so-called *Theories of Mind* (see ch. 4), what cannot be demonstrated by external means, or accessed

through conscious introspection or verbal testimony, often remains taboo. A major re-orientation of the discussion of context — from the construal of physical reality to the construal of mental reality — is surely in order. Even more than external reality, social reality is not an objective phenomenon, but rather an intentional, purposive, framed construct.

The study of communication in its social setting has often fallen prey to a like empiricist reticence, whereby only the transcribed text or the recorded video — the reified speech situation — are conceded the status of ‘context’; and where asymmetrical (‘narrative’) communication is deemed lacking in social context — since the ‘objective’ record shows only a single interlocutor. This throw-back to objectivism obscures the fact that the relevant social context during communication are neither the audible words nor the visible gestures, but rather the mental states of beliefs and intention of one’s interlocutor — whether present or presumed. The text and the video are of course part of the empirical evidence. But the evidence should never be confused with what can be inferred from it (see ch. 8).

1.6. Recurrent themes

A number of recurrent themes have been traditionally associated with pragmatics. Without exception, they harken back to the central core of pragmatics — the dependence of mental representation on its selected frame, chosen perspective, construed context. In this section I will briefly survey some of the more durable *leitmotifs* of pragmatics.

1.6.1. Relevance and importance

These two partly overlapping notions, *relevance* and *importance*, are indispensable to the pragmatic program. They are both contextual subjective judgements that can be captured by neither deduction nor induction, but only by the third mode of inference, *abduction* (see 1.6.4 below as well as ch. 8). They are, much like context itself non-discrete, thus a matter of degree.

1.6.2. Similarity, analogy and metaphor

Much like relevance and importance, similarity and analogy are in principle impervious to deductive or inductive reasoning, dependent as they are on contextual judgement. Like relevance again, they are non-discrete, graded notions. In principle, anything can be similar to anything, and anything may be the analog of anything — if construed in the right context.

Closely related is the phenomenon of the non-literal — figurative, metaphoric — meaning. Metaphors are based on contextual judgement of similarity and analogy, and thus have no objective sense. They are constructed for the occasion, in specific

contexts, on the fly. Or, as Lakoff and Johnson (1980) put it:

These similarities do not exist independently of the metaphor. The concept of swallowing food is independent of the metaphor, but the concept of swallowing ideas arises only by virtue of the metaphor. (1980: 148).

The same point may be found at the intersection of Aristotle's treatment of metaphor in the *Rhetoric*, and his context-dependent approach to similarity in the *Metaphysics*. Aristotle's dismissal of literal ('ordinary') usage as source of new information is indeed reminiscent of Wittgenstein's view of deductive logic in the *Tractatus*:

Ordinary words convey only what we know already; it is from metaphor that we can best get hold of something new. (*Rhetoric*, 1410b: 2250)

For Aristotle, metaphors are founded on similarity:

The simile also is a metaphor [...] All these ideas may be expressed either as similes or as metaphors; those which succeed as metaphors will obviously do well also as similes, and similes, with the explanation omitted, will appear as metaphors. (*Ibid.*, 1407a1: 2243–4)

But similarity is in turn dependent on the choice of relevant context. Thus, in discussing Socrates' question "Is gold more like silver than tin is, or is gold more like fire?", Aristotle (*Metaphysics*) observes that the answer will depend on whether the relevant context for similarity is 'precious metal' or 'color':

[. . .] tin is like silver in color, and gold is like fire in so far as it is yellow or red. (*Metaphysics*: 206).

Essentially the same point was made in Plato's *Hippias Major*:

And didn't Heraclitus, who you yourself bring in, say the same thing too, that 'the wisest of men is seen to be but a monkey when compared to God in wisdom and fineness and everything else'? (*Hippias Major*: 10–11)

1.6.3. Kind vs. degree: Categories and classification

Somewhat dependent on similarity and analogy is the issue of differences in *kind*, which set boundaries between types, vs. differences in *degree*, which set apart tokens within a type. This distinction, again wholly dependent on contextual judgement, goes to the heart of *categorization*, *taxonomy* and *hierarchies of types* (ch. 2). In spite of strenuous efforts by the logical positivists (e.g. Russell 1911, 1918), categorization and thus taxonomy are in principle impervious to deductive or inductive logic. As both Plato (*Hippias Major*) and Aristotle (*Metaphysics*) observed, all taxonomies are in principle dependent on our ability to tell 'major' traits, those that characterize differences in kind, from 'minor' ones, those that characterize differences in degree. But such a distinction is in turn dependent on contextual judgements of relevance, thus ultimately on the construed *purpose* of the taxonomy. As Ernst Mayr (1976) has observed in a more down-to-earth context (and, incidentally,

in a stunning rejection of the Logical Positivists purported distinction between descriptive and theoretical statements; see ch. 8):

Every biological classification is a *scientific theory*. Classifications have the same properties as all theories in science. A given classification is *explanatory* [. . .] A good classification, like a good scientific theory, has a high *predictive power* with respect to the assignment of newly-discovered species and the pattern of variation of previously unused characters. (Mayr 1976: 427; italics added).

In Aristotle's classification of *scala naturae* one finds hedges that reveal the taxonomist's pre-empirical theoretical bias; that is, his/hers contextual judgement about central vs. less-central criteria, thus important vs. less important taxonomic boundaries. In distinguishing between the three *major taxa* — plants, animals and humans — Aristotle first considers the criterial properties (nutritive soul, sensory soul, or rational soul, respectively) to be absolute and discrete, arranged in a formal hierarchy of types:

The power of self nutrition can be separated from all other powers [of the soul], but not they from it — in mortal beings, at least. The fact is obvious in plants; for it is the only psychic power they possess. This is the originative power the possession of which leads us to speak of things as *living* at all; but it is the possession of *sensation* that leads us for the first time to speak of living things as *animals*. (*De Anima*; J. Barnes, ed. 1984: 658; italics and brackets added)

Plants have none but the first, while another order of living things has this *plus* the sensory. (*ibid.*: 659)

[. . .] and still others, i.e. man and possibly another order like man or superior to him, [have] the power of thinking and thought. (*ibid.*: 660; brackets added)

That is:

Humans possess reason, animals (including humans) possess perception, plants the nutritive/reproductive faculty, *threptike*, alone. (Lloyd 1996: 67).

But even here, at the apex of nature's classificatory hierarchy, the first two criteria, nutritive and sensory soul, are eventually conceded to be a matter of degree, given the complex facts of biology:

Nature proceeds little by little from things lifeless to animal life in such a way that it is impossible to determine the exact line of demarcation, nor of which side thereof an intermediate form should lie. Thus, next after lifeless things come the plant, and of plants one will differ from another as to its amount of apparent vitality [. . .] In regard to sensibility, some animals give no indication whatsoever of it, while others indicate it but indistinctly [. . .] And so throughout the entire animal scale there is graduated differentiation in amount of vitality and in capacity for motion. (*De Partibus Animalium*; Barnes ed. 1984: 922)

Only the criterion that sets humanity apart from all other living beings, possession of the rational soul (*nous*), remains absolute and discrete. And in treating lower sub-

taxa in all three major divisions, Aristotle allows as a matter of course for gradation, as well as for classification by similarity, analogy and metaphor (Lloyd 1996: 150–1).

1.6.4. Abductive inference and analogical reasoning

Logicians and philosophers of science ever since Aristotle speak primarily of two modes of inference — *deduction* and *induction*. The first proceeds from the general rule to its specific instances, the second presumably from specific instances to the general rule.¹ But there exists a third mode of distinctly pragmatic inference, recognized first by Aristotle (see 1.7.3.5. below, as well as ch. 8) and re-christened *abduction* by C.S. Peirce. This is the mode of inference used in reasoning about relevance and importance, similarity and analogy, hypothesis and explanation. In reasoning abductively, one argues neither that something is necessarily the case, nor that it is most likely the case, but rather that it *must* be the case — if the seemingly-chaotic facts are to be interpreted coherently. The ‘must’ of abduction is but a promissory note, a low-odds bet on one’s intuition. It is thus also a bet on one’s successful construal of the right context. Hypotheses are only validated *post hoc*, by the accumulation of further evidence as well as by deductive and inductive reasoning about the validity of the evidence (see ch. 8).

1.6.5. Explanation and understanding

Explanation and theoretical understanding are also, in principle, pragmatic notions; first because they are the product of abductive reasoning; second because they always involve placing the phenomenon in a wider context; and third because the appropriateness of the wider context can only be construed (or abduced) but never deductively or inductively supported (see ch. 8).

1.6.6. Teleology, purpose and function

Intent and *purpose* are crypto-pragmatic notions, whereby the mind of some intender is the construed context for a communication or an action. In much the same way, the more subtle teleological notions of *function* and *adaptative motivation* are pragmatic — abductive, theoretical — constructs; they are hypotheses that do not necessarily attribute self-consciousness to purposeful behavior. Such teleological notions often form the context within which behavior, cognition, communication — and biological evolution — are to be understood or explained (see ch. 8).

1.6.7. Figure/ground: Saliency, frequency and markedness

The notion of *saliency* is fundamentally pragmatic, since the saliency of a *figure* depends on how it stands out vis-à-vis some *ground*, i.e. its context. All other things

being equal, the figure/ground contrast is distributional, whereby the less-frequent, surprising figure stands out vis-à-vis the more frequent, predictable ground. This statistical skewing is the most fundamental link between cognitive psychology and information theory (Attneave 1959).

Likewise, the linguistic contrast of *marked* vs. *unmarked* is fundamentally a frequency-dependent figure/ground contrast, albeit with well-known structural consequences — that sooner or later the less frequent marked form also becomes the perceptually more salient one (Zipf 1935; Givón 1995, ch. 2).

1.6.8. Gradation, continuum and non-discreteness

Non-pragmatic approaches to description, thus to multi-level hierarchic systems, have always taken it for granted that categories are discrete. That is, that their membership criteria are governed by the strict laws of *non-contradiction* and *the excluded middle*. This approach is usually attributed to both Plato and Aristotle, in spite of the fact that both of them, as noted above, succumbed, at least on some occasions, to non-discrete categories and analogical criteria of classification.

In contrast, pragmatics has always been associated, whether explicitly or implicitly, with a non-discrete, graded approach to categories. While not all exponents of non-discreteness explicitly relate it to the core pragmatic notion of context, I would like to suggest that context is the real arbiter of non-discreteness. The argument runs roughly as follows:

- The contextual frame, being itself outside the picture, cannot be constrained by the frame-internal system of discrete categories. Whatever the outermost meta-level may be, it remains outside the classificatory schema.
- In principle, therefore, adjustments to the ultimate frame are made without regard to discrete categorial boundaries.
- If the frame can be adjusted gradually and non-discretely, the figure within it will perforce also adjust gradually and non-discretely.
- In principle, then, non-discreteness inside the frame is but the consequence of the non-discreteness of the contextual frame itself.

The necessary connection between contextual framing and non-discreteness can only be broken by ‘discretizing’ context; that is, by integrating the frame into the categorial schema inside it. But, as Russell would have surely protested, the minute such a manoeuvre is accomplished, the erstwhile frame cedes its context status to a yet-wider, non-discrete meta-frame on the outside.

1.6.9. The semiotic relation

Any cogent discussion of semiotics should begin with the opening salvo of Aristotle’s *De Interpretatione*, the paragraph that also launched philosophical empiricism and linguistic structuralism:

Now spoken sounds ['words'] are symbols of affections of the soul ['thoughts'], and written marks are symbols of spoken sounds. And just as written marks are not the same for all men ['are language specific'], neither are spoken sounds. But what these are in the first place signs of — affections of the soul — are the same for all ['are universal']; and what are these affections are likenesses of — actual things — are also the same for all men. (*De Interpretatione*, tr. by J.L. Ackrill; in Barnes, ed. 1984: 25)

At first glance, Aristotle seems to incorporate the language-user's mind into his semiotic equation. This impression is illusory, however, since Aristotle considered our mental constructs to be perfect isomorphic reflections of objective reality. No active construal, let alone subjective contextual effects, were contemplated.

C.S. Peirce's use of the third term *interpretant* in his semiotics is taken by some scholars (e.g. Morris 1938) to have transcended Aristotle's objectivist program, with the interpretant standing in for the contextualizing, framing, intending mind. But the validity of this claim is not all that transparent in Morris's rendition of Peirce, a rendition that merely recapitulates Aristotle's *De Interpretatione*:

The interpretant of the sign is the mind; the interpretant is a thought or a concept. These thoughts or concepts are common to all men and arise from the apprehension by the mind of objects and their properties; uttered words are then given by the mind the function of directly representing these concepts, and indirectly the corresponding things; the sounds chosen for this purpose are arbitrary and vary from social group to social group; the relations between the sounds are not arbitrary but correspond to the relations of concepts and so of things. (1938: 30)

That Peirce's 'interpretant' has spawned a cottage industry of baffling and oft-conflicting interpretations is not surprising, given Peirce's penchant for metaphysical turn of phrase. Morris (1938) goes on to assert that Peirce's semiotics "... prepared the way for the contemporary emphasis on rules of usage ... (1938: 31). Similar claims are made by Short (1981) and Shapiro (1983). While Peirce's general pragmatics program may have indeed had such an impact, it remains unclear whether the 'interpretant' itself ever transcended Aristotle's 'affections of the soul'.

The semiotic relation itself, between a sign and its *designatum*, has been taken by structuralists (e.g. Saussure) and positivists (e.g. Carnap) alike to involve no framing mind. Indeed, Carnap's entire program in *The Logical Syntax of Language* (1937/1959) rests on the strict segregation of rule-governed syntax-semantics-logic from messy pragmatics (see 1.3 above). The same distinction is echoed in the work of more recent formal pragmatists, such as Gazdar (1979):

Pragmatics has as its topic those aspects of the meaning of utterances which cannot be accounted for by straightforward reference to the *truth conditions* of the sentence uttered. (1979: 2; italics added)

Even more cognitively oriented pragmatists seem to take the structuralist/positivist notion of 'code' for granted. Thus, for example, Sperber and Wilson (1986) argue, at times rather ingenuously, that there exist two distinct modes of communication:

(i) rule-governed *coding-decoding* communication; and (ii) context-dependent *ostensive-inferential* communication, suggesting, at least implicitly, that some natural — biologically-based — communication modes can somehow function without any pragmatics:

We maintain, then, that there are at least two different modes of communication: the coding-decoding mode and the inferential mode [...] [though] complex forms of communication can combine both modes. (1986: 27; brackets added)

This distinction, between the ‘code itself’ and the pragmatic inferences that govern its use, is a somewhat inelegant way of dragging the *contextualizing mind* back into the communicative transaction through the back door and without proper admission. Sperber and Wilson insist that the inferencing mind be conceptually segregated from the ‘strictly-linguistic’ code itself, even when in actual practice the two can never be too far apart.

The intellectual program of segregating an idealized linguistic code, on the one hand, from the context-sensitive pragmatic conventions that govern its use, on the other, is of course reminiscent of Chomsky’s distinction between the idealized, invariant *competence* and the messy, context-dependent *performance*, itself indebted to both Saussure and Plato. A similar segregation is conceded by Katz (1977):

[Grammars] are theories about the structure of sentence types [...] Pragmatic theories, in contrast [...] explicate the reasoning of speakers and hearers in working out the correlation in a context of sentence token of a proposition. In this respect, pragmatic theory is part of *performance*. (1977: 19; italics added)

The most sensible comments on the intellectual program of segregating the rule-governed *code* (‘logical’ syntax and semantics) from the more messy, context-bound pragmatics of *usage*, are found in Levinson (1983):

The fact remains that there are clear interactions between the organization of syntactic elements in a clause and pragmatic constraints of various sorts. (1983: xi)

Levinson entertains various segregationist definitions of pragmatics, the most prominent being:

Pragmatics is the study of those relations between language and context that are **grammaticalized**, or encoded in the structure of the language. (*ibid.*: 9)

Pragmatics is the study of the relations between language and context that are basic to an account of language understanding. (*ibid.*: 21)

Pragmatics is the study of the ability of language users to pair sentences with the context in which they would be appropriate. (*ibid.*: 24)

He then goes on to concede the empirical inadequacy of all segregationist programs:

This amounts to a concise argument that semantics is not autonomous with respect to pragmatics, and that pragmatics provides part of the necessary input to a seman-