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Content, Embodiment and Objectivity

—The Theory of Cognitive Trails—

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List of Sections

(1) Experience and Thought

Frege was a powerful advocate of the explanatory priority of a theory of representation in thought over a theory of representation in experience.[1] It is hard to overestimate the importance of this theoretical strategy. It has had ubiquitous consequences: for our conception of persons—and the relation of persons to other animals—for computational and other technologies, and for our modeling of psychological, social and semantic phenomena. Most systematic theories of representation since Frege, however divergent from each other they have been in other respects, have followed Frege in adopting the priority of thought over experience. The principle exceptions to this have belonged to the empiricist or positivist traditions; most impressively, perhaps, Carnap's *Aufbau*. But theories in those traditions have been

[1] For brevity I shall normally omit "theory of representation" and speak simply of the priority of thought over experience.

widely viewed to be failures in their own terms, and to make untenable assumptions of the 'given' in experience, and of the duality of representational scheme and experiential content.[2] In this paper I explore one way to do representational theory which adopts the converse of Frege's priority—i.e. which explains thought in terms of experience—but which nevertheless is not an empiricist theory.

I shall call representational theory which takes experience to be prior to thought "nonconceptual and constructionist". It is nonconceptual because it does not take the atoms of representation to be concepts (the constituents of thoughts[3]) and it is constructionist because it attempts to explain thought in terms of nonconceptual atoms grounded in experience. (Experience is taken to be *prior* to thought, not merely independent of thought. I don't consider 'eclectic' theories—recently popular in the philosophy of psychology—that employ mutually independent theories of thought and experience). The version of nonconceptual constructionist theory explored here is called 'the theory of cognitive trails'. It is, in addition[4], neither empiricist nor materialist because it adheres to a symmetric metaphysics: it neither assumes (our conception of) the mind in order to explain (our conception of) the world, nor does it assume (our conception of) the world in order to explain (our conception of) the mind. My aim in this paper is to give enough of a sense of the theory of cognitive trails to show the *possibility* of the enterprise. I don't present arguments against conceptualist representational theory, nor do I provide a theory equipped in all details, applied to specific philosophical problems, and accompanied with its own metaphysics and epistemology. But I do try to show that the semantic tradition since Frege has explored only a partial sub-space of the possible territory available to representational theory; that a range of theoretical options which have been assumed to be unavailable can be legitimately pursued; and that the payoff may be handsome. In other words: 'One hundred years after *Uber Sinn und Bedeutung* how about looking over here?!'

The kind of theory which I explore has generally been assumed to be impossible (if considered at all). We can see why by asking what is entailed by the relative priorities of experience and thought. The concept of *thought* is introduced as it is in Frege:

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[2] Davidson (1974) and (1989) and McDowell (1986).

[3] I use 'concept' in the more familiar, but non-Fregean way.

[4] and unlike the theory of 'C3' which I pursued in Cussins (1990)

thoughts are those things for which the question of truth arises.[5] Representation in *experience* is representation in embodied (eg. human) mental acts of perceiving, remembering, talking, writing, imagining, playing, 'thinking', exploring and other forms of acting and animal practice. *Priority* may be taken to be the relation of logical or constitutive priority familiar within analytic philosophy: roughly, A is prior to B iff the concept *A* can be understood without the concept *B*, but not vice-versa. Or: a theoretical reconstruction of the concept *A* need not appeal to the concept *B*, but a theoretical reconstruction of the concept *B* should appeal to the concept *A*.[6] So when theorists of representation take thought to be prior to experience, they take truth and truth-conditions (hence also their functional determinants: satisfaction-conditions and the realm of reference) to be explained independently of a theory of embodied experience and practice (or not at all). And they suppose that representation in embodied practice is to be explained in terms of the prior, and therefore given, notions of truth and the realm of reference. The norms of experiential practice are, from the point of view of explanation, external to the practice itself. The concrete, embodied practices of linguistic activity are to be understood, metaphorically, as aiming at an external target: the true. Hence, the integrity of the target is not threatened by a lack of integrity in our 'target practice'. The metaphor of a target at which we aim is pervasive in philosophy, and in those disciplines that make use of representational theory, even in the etiology of the word "intentionality" itself.[7]

To give up on the metaphor and attempt to explain truth and the realm of reference in terms of embodied experiential practice looks unlikely at best. If you start out with a conception of experiential practice which is independent of the truth (or correctness) norms which govern it, don't you thereby lose any grip on the practice as *representational*, as involving action or perception? Action is goal-directed and answerable to intentions, perception is veridical or hallucinatory. Just as the game of chess shorn of the aim of winning is an empty syntactic computation (no longer chess), so

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[5] Frege "Thoughts" in Frege (1977)

[6] I am not entirely happy with this familiar notion. My preferred alternative employs the notion of the *construction constraint*, and the idea that the B concepts belong to a level of theory or discourse which is *realization-constructed* from a level of theory or discourse to which the A concepts belong (Cussins, 1992). But for the purposes of this paper we can get by with the familiar notion.

[7] According to Anscombe (1965), the term "intentionality" comes from the latin *intendere arcum in*: to aim a bow and arrow at ...

human practice shorn of external norms is mere physiology and physics. (A practice of 'thinking' which does not aim at the true is not thinking, merely an experiential sequence.) If we fail to specify a representation in terms of an element of the realm of reference (that which determines truth or warranted-assertibility value), don't we thereby fail to specify something with 'aboutness' or intentionality? The philosophical tradition has not encouraged us to believe that if we start outside the circle of intentionality we will ever be able to find our way back in.

Frege adopted a more Cartesian conception of experience, not as embodied practice, but as the private 'Ideas' of an individual. The threat, however, is the same: to attempt to explain thought in terms of Ideas is to abandon the possibility of universal science, the possibility of inter-subjective communication and, indeed, the possibility for any rational basis for agreement and disagreement.[8] If we don't start with truth, then we will be unable to finish with truth; representation will collapse into relativistic practice, and thereby into the loss of significance altogether.

I shall show that these warnings about the dangers of life outside the Fregean semantic tradition are much overblown. The reasonable alternatives to Frege's priority are not exhausted by explanatory autonomy and by explanatory inter-dependence between the content of experience and the content of thought, for we can make sense of the more radical thesis of the priority of experience. If we can understand how to start our theorizing without truth and the other denizens of the realm of reference, *but nevertheless with a genuine notion of significant representation*, then we will be able to survive on the outside for long enough to tell whether truth can be recovered.

(2) Mind and World: Preserving a Symmetric Metaphysics

Many Idealists, phenomenalists and empiricists have attempted to start their representational theory with experience rather than with thought or the conceptual elements of thought. But they have all supposed that starting with experience involved starting with Mind. Since explaining representation in thought involves an account (eg. an ontology) of the world, the project of explaining thought in terms of experience became, for them, explaining the world in terms of mind. That is, for those who have taken experience to be prior to thought, asymmetric representational theory has entailed an asymmetric metaphysics. And that has been their downfall. The world is too large to

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[8] See Frege's "Logic (1879-1891)" and "Logic (1897)" in Frege (1979) and "Thoughts" in Frege (1977)

fit in human mind; their only way to preserve a realistic world has been to appeal to the more capacious mind of a Berkeleian God.

Frege combines an asymmetric representational theory (the priority of thought) with a symmetric metaphysics: he presupposes both world and mind (rational judger of thoughts). The metaphysical presupposition of both mind and world follows from Frege's starting his representational theory with the sense / reference distinction in place. The realm of *reference* is the world that we talk and think about (Dummett, (1973) p.198). Sense is the mode of presentation of the world (the realm of reference) to a mind (subject of thought). The realm of *sense* is thus the realm of cognition. In making the sense / reference distinction basic to his theory of representation, Frege takes the cognition / world distinction to be basic to (ie a starting point for) his theory. For Frege, a condition for the possibility of representation is the separation between cognitive subject and cognized world. Therefore, representational theory cannot explain what it is for there to be a separation between cognition and world.

By contrast, the theory explored here attempts a different strategy to maintain a symmetric metaphysics in the face of an asymmetric representational theory (the priority of experience). Empiricists presuppose the mind in order to explain the world; materialists presuppose the world in order to explain the mind and Fregean rationalists—as we have seen—presuppose both mind and world. But the theory of cognitive trails *begins* its representational theory with a notion of 'experience' which does not come equipped with a ready-made distinction between sense and reference, nor does it present itself as a part of the total experience of an experient. Rather, the theory explains what it is for a sense / reference distinction to arise in experience: it provides an account of the *logical genesis* of the sense / reference distinction, and thereby of the experient / world distinction. Hence mind and world are treated symmetrically.

My aim in this paper is to indicate the possibility of a certain kind of representational theory, not to argue for its adoption. But it should be noted that if the possibility can be made out, tremendous explanatory power is gained in virtue of not presupposing the sense / reference distinction. Not just for the purposes of a representational theory suited to explaining learning, the acquisition of new concepts, or even the first concepts, in developmental psychology. Nor just for the purposes of a representational theory suited to explaining the evolution of cognition. Nor just for the purposes of a representational theory suited to explaining context-sensitivity, vagueness

and particularity in semantics. But also because of the need for a theory to sustain the plausible conviction that much of our intelligence in communicating and acting consists in our ability to *move between* alternative conceptualizations of a problem domain, rather than consisting largely in our ability to carry out inference within a given conceptualisation.

(3) Specifying Content by Reference to the Realm of Embodiment

Gareth Evans (1982) introduced the notion of nonconceptual content, although he did so in a way which invited the charge of an empiricist distinction between scheme and content.[9] It would be unfortunate, however, if the not properly worked out explicit statements about nonconceptual content in *The Varieties of Reference* were to obscure some remarkable resources for a nonconceptual constructionist theory that can be teased out of Evans's posthumous work. A book that begins with a chapter of Fregean commitments leads by Part II to a sub-text (at least) that provides for the priority of experience over thought. In this section I set up these resources so that they can be put to work for the theory of cognitive trails.

A representational content is a presentation (or re-presentation) of the world in experience or in thought. Our question is this: how is a theorist to capture—by means of a canonical (theoretically privileged[10]) specification—the nature of different contents that can be carried by a representation? Almost all semantic theories do so by having the specification refer to an element of the realm of reference. They thereby abandon our ambition of explaining, rather than presupposing, what it is for there to be a mind / world separation: an independent world given in experience to an independent mind. Is there an alternative to specification by reference to the realm of reference which doesn't abandon content?

Evans saw that *contents can be canonically specified by the theorist's referring to abilities of the organism, where the abilities are not (or need not be) part of the realm of reference.* The realm of reference is that with respect to which the correctness (eg. the

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[9] See for example, p.123n, p.158 and p.227 in Evans, and the end of my §4.

[10] 'theoretically privileged' because revealing of the subject matter of the theory. What is gold? The canonical specification relative to physical theory is that gold is the substance with atomic number 79. A non-canonical specification is that it is the yellow, shiny substance in the river-bed.

truth value) of the content is determined. Evidently, a subject in thinking of a coffee mug that it is full—a thought which is sustained by the subject's perceiving the mug—is not *referring* to abilities to grasp the mug, to track it as it moves, or to be selectively sensitive to changes in its appearance. Nevertheless, Evans's idea was that the cognitive significance of the singular mug-content could be captured, and could only be captured, by the theorist's referring to abilities to grasp the mug or otherwise to locate it, to track the mug through space and time, and to be selectively sensitive (in judgment and action and memory) to changes in the mug's features. These abilities are not available to the subject as the content's referent, but they *are* available to the subject as the subject's experience-based knowledge of how to act on the object, and respond to it. The theorist may canonically specify the content by referring to abilities, *because* the cognitive significance of the content consists in the experiential accessibility of these abilities to the subject in experience-based knowing-how.[11]

Let's unpack this a little:- There is a realm of reference which, in this case, consists of the coffee mug, its liquid contents, its being half-full, the table, the mug's being on the table, and so forth. Ontology is typically concerned with how the realm of reference should be specified: in terms of things, facts, situations, states of affairs, ... , but that is not my concern. What is important here is that the realm of reference is that which determines whether a given content is correct (true, veridical, accurate) or incorrect (false, illusory, inaccurate). And that the normal canonical specification of contents is achieved by referring to the realm of reference.

But the animal also has a range of abilities, skills, dispositions and mechanisms, in virtue of which the animal is able to grasp the content. This range will include sensory and effector mechanisms which are sensitive to, and can store and access information from the mug; for example, information about the mug's weight, colour and position. It will include skills to act directly on the mug, and to behave appropriately with respect to it. We may lump these together as the content's *embodiment* in the organism and in its environment. Psychology is typically concerned with how the realm of embodiment should be specified: in terms which refer only to the organism, or to the organism /

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[11] This parallels the explanation of why the theorist may canonically specify the conceptual content by referring to eg. a material object in the realm of reference: because the object may be experientially available to the subject. And just as the conceptual content is not a material object, so the nonconceptual content is not an ability.

environment interaction; in computational terms, physiological terms, the apparatus of information processing, ... , but that is not my immediate concern. What is important here is that the realm of embodiment, unlike the realm of reference, is **not** that which determines the correctness or incorrectness of a representational content. For, evidently, the truth of the content that there is a mug on the table does not depend on the sensitivity of the animal's sensory mechanisms; it does not depend on the animal's grasping the content at all. The realm of embodiment is distinct from the realm of reference.[12]

It has usually been supposed that to attempt a canonical specification of representational content by referring to the realm of embodiment is to make the truth or correctness of a content dependent on an animal's contingent skills, abilities and mechanisms. On the face of it, a theorist who attempts to provide canonical specifications of content which refer to the realm of embodiment is confusing the realm of embodiment with the realm of reference. Yet I suggested above that Evans's insight was that content could be specified by reference to the realm of embodiment! But this is no blunder: *What Evans saw was how to pull apart the specification of content from the specification of reference or truth.* If a canonical specification of a (propositional) content need not be a specification of a truth (or verification) condition, then canonical specification of a content which refers to the realm of embodiment does not entail the evident falsehood that the truth of the content depends on the character of the realm of embodiment.

The philosophical literature does, of course, contain suggestions of how content specifications need not be specifications of truth conditions, but rather specifications of verification conditions or conditions of warranted assertibility. But this is not at all what I have in mind. All such theories are anti-realist in one stripe or another: *in specifying the verification conditions they take themselves to be directly specifying the realm of reference.*[13] Since the realm of reference is the world that we talk and think about, the world is impacted by the limitations of our capacities; it does not transcend them. But

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[12] The realm of embodiment is always intensionally distinct from the realm of reference; it is usually extensionally distinct. Usually but not always: one can think about one's own body for example.

[13] Directly specifying the realm of reference, and *not* the realm of cognition. As the modest realist presupposes the world in talking about mind, the verificationist presupposes the mind (recognitional capacities, routines of verification) in explaining the world. The position I am after takes neither the mind nor the world pole as a given.

Evans's insight is entirely compatible with realism. Content specifications which refer to the realm of embodiment are not direct specifications of the realm of reference. Not only are they not specifications of truth conditions as the realist conceives of truth conditions, but also they are not specifications of truth conditions as the anti-realist conceives of truth conditions. They are not specifications of truth conditions, under any conception, at all. For Evans, truth conditions (and, more generally, correctness conditions) are fixed by the realm of reference, and not by the realm of embodiment; but the cognitive significance of representation is fixed by the realm of embodiment, and not by the realm of reference.

Nor is this a dual component theory of content in which explanatorily quite independent theories are employed to account for what are taken to be autonomous components of 'content': one component concerned with reference and truth and one component concerned with the 'narrow psychological' explanation of behavior or functional role.[14] The neo-Evansian is neo-Fregean at least this far: the theory of cognitive significance (sense) *determines* the theory of reference. For this reason, a realm of embodiment specification of content can be (although it need not be) an *in*direct specification of the realm of reference (of course, we have to show how this can be). This is quite unlike dual component theory for which functional role does *not* determine referential significance. For both the neo-Fregean and the neo-Evansian what it is to be an element of the world is to be the referent of a sense-content, and what it is to be a mind is to be the subject of a sense-content: representational contents are Janus-faced in that they are symmetric with respect to mind and world. But for the dual component theorist the explanation of the structure of the world and the explanation of the structure of sense-content are independent. Whilst the theory of reference-content is dependent on the theory of the structure of the world, the theory of the world is explanatorily *in*dependent of representational theory.

Nor is the neo-Evansian engaged in an elimination of content. In order to see how it is possible to canonically specify representation by reference to the realm of embodiment *without abandoning content*, we need to proceed in stages. In the next few sections I am concerned with relating this central idea of content specification to the notion of *objectivity*. The crucial point is that content specification by reference to the realm of embodiment does not presuppose the objectivity of content (the separation of mind and world), but—rather—by understanding the different ways in which

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[14] Some examples: Putnam (1975), Burge (1977), Fodor (1981), McGinn (1982).

embodiment can be made available in experience, we can better understand what it is for a world to be given to a mind. *This is why content specification by reference to the realm of embodiment is not directly the specification of truth or reference (since objectivity is not presupposed), and why it is the specification of content (since objectivity is explained).*

Evans's idea is phenomenologically very natural and persuasive (although trained as we are in the analytic tradition, it takes a little getting used to)[15]. What does my seeing the mug as being located *there* consist in? What does my seeing it as a *particular* consist in? The Evansian begins like this: the subject sees the mug as graspable, as locatable, as being such as to resist manual-pressure, as being drinkable-from, as being push-and-then-fallable ... These descriptions that the theorist uses are not likely to be elegant or simple, for they are not available to the *subject* as descriptive conditions on the world. They are, rather, available to the subject in the kind of way in which I know, on the basis of my kinaesthetic experience, how to raise my left hand to a point several inches above my right ear. I know very well how to do this. Moreover, I know that I know how to do it (I can, for example, make myself aware in imagination of each of the stages of the action-sequence).

What is for the subject experientially direct is for the theorist highly complex. The theorist has to make available in language those abilities that were available to the subject in experience. In shifting from one representational medium (experience) to another representational medium (language), elegance and simplicity is replaced by hyphenation and complexity. But given the theorist's ambitions, trading elegance for substance is good business.

(4) S/Ojectivity of Thought: Generality and whether the realm of embodiment makes available the realm of reference

There is a perceptual content which we, as theorist, know to be about the coffee mug in front of the organism, which is canonically specified by reference to abilities to track the mug, to orient with respect to it and to be selectively sensitive to changes in it.

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[15]I will not do justice here to the plausible phenomenology of neo-Evansian theory, nor to Evans's motivations which had to do with giving an account of singularity which was compatible with the generality constraint.

These abilities are part of the realm of embodiment and are not part of the realm of reference. Presuppose the organism's possession of no other contentful capacities: no general mastery of objectivity and in particular, no background knowledge about what mugs are, or liquids, quantity measurement, tables and containment. Then ask: Does the organism enjoy a content which is specified via the *realm of reference* in virtue of having this experience which is specified via the *realm of embodiment*? Is a portion of an independent world (that which makes contents correct or incorrect) thereby presented to a subject (that which grasps contents, and acts on their basis)?[16] That is, does a part of the realm of embodiment being given in experience-mediated knowing-how make it the case that a part of the realm of reference (the objective world) is given to a subject?

Intuitively it does not. An objective world is given to a subject if the content presents something as being independent[17] of the subject's particular abilities, and particular location in space and time. But given only the realm-of-embodiment-specified content, all the 'subject' (experiencing organism) has is an experiential awareness of how to move etc. in response to local changes in its environment. If this is a subject's conception of a referent, it would be a conception of something as not independent of contingent characteristics of the subject itself. The necessary separation between subject and object would not have been achieved. If we could presuppose the sense / reference distinction then we could say that the content is a presentation of the *mug* to the subject in

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[16]This is, of course, artificial. Since if an object were, thereby, available to a subject it would have to be a rather simple one, since it would have to be such as to be adequately conceived without any background conceptual theory (we are assuming that the subject has no other contentful capacities). And I don't want holism to be the issue here. Ask the question about a whole system of realm of embodiment contents.

[17] See below: metaphysically or logically independent, not ontologically independent. Strawson (1959), in considering the intelligibility of a purely auditory world, identifies the conditions of objectivity with the conditions for a non-solipsistic consciousness, and connects this with the idea of reidentifiable particulars: "to have a conceptual scheme in which a distinction is made between oneself or one's states and auditory items which are not states of oneself, is to have a conceptual scheme in which the existence of auditory items is *logically* independent of the existence of one's states or of oneself. Thus it is to have a conceptual scheme in which it is logically possible that such items should exist whether or not they were being observed, and hence should continue to exist through an interval during which they were not being observed. So it seems that it must be the case that there could be reidentifiable particulars in a purely auditory world if the conditions of a non-solipsistic consciousness could be fulfilled for such a world", pp. 72-73.

a looks-thus-and-so-and-reach-twist-and-graspable... kind of way: the content would involve the identification of a particular. But specification by reference to the realm of embodiment does not presuppose the sense / reference distinction: we have to say that experience presents *looks-thus-and-so-and-reach-twist-and-graspable...ly*, and that is not to present something (a thing) as a particular object which is, in principle, publicly available or identifiable from any perspective. If we attempted to give the content a referent, it would be a referent that was available only to the experiencing organism, and only when it was enjoying something like the present information-link.[18] That is to say, it would be a necessarily local (and context-dependent) object, and hence no object at all. Hence, as far as this content goes, there would be no *subject* at all; only an experiencing organism, since there would be no basis for the experient to think of itself as one element amongst others in the objective world. Objects and subjects go together, or not at all.

A start on the objectivity of content is this: that the content's referent is given as public, as something which is, in principle at least, equally available to any subjective point of view[19]. A sign of this objectivity is that the content can be incorrect: If the referent is given as a public object, then it is always possible that the subject is wrong about the object, even where the referent is the subject oneself. What we are after is a metaphysical distance between subject and object, a distance which makes intelligible the subject's being wrong (and therefore also being right) about the object; which provides for the possibility of truth. Such a metaphysical distance may obtain between the subject and itself, and between the subject and some of its own states. For this reason the term 'objectivity' can be a misleading label for metaphysical distancing: since what is subjective is not objective, the subject's own states of mind are—if anything is—subjective, yet the subject's own states of mind may be given to the subject as object. So instead of speaking of 'objectivity', I shall speak of 'subject-object-ivity' or more simply 'S/Ojectivity'[20], thus characterising contents which exhibit metaphysical distance between subject and object.

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[18] For the notion of an information-link, see Evans (1982), chapter 6

[19] Of course, there may be a physical barrier to identifying the referent from certain perspectives, but in saying "*in principle* identifiable from any perspective" I mean that I am concerned only with conceptual, or metaphysical barriers. Not with our inability to see the contents of a closed drawer, but with the fact that from certain points of view, a mirage is given as public, but not from others.

[20] The first syllable of 'S/Ojectivity' is pronounced to rhyme with 'toe'. The vowel is therefore distinct from the first vowel in both 'subjectivity' and 'objectivity'.

To explain why realm of embodiment specified contents need not present the realm of reference, but how, nevertheless they can do so, we need a much firmer grasp on S/Ojectivity. The Fregean tradition of taking representation in thought to be prior to representation in experience takes S/Ojectivity of content to be *generality*. I will first explain this equation, then see what the consequences are for realm of embodiment specified nonconceptual contents, and finally work towards a quite different conception of S/Ojectivity which is appropriate to the priority of experience over thought. Once we have developed an account of S/Ojectivity in experience, we can explain thought as the content of *S/Ojective* experience, and then compare this new conception of thought with the Fregean conception.

The correctness of a thought is truth. Familiar semantic theories explain the truth of complex (quantified, negated, hypothetical, conjunctive) sentences of a formal language (a linguistic manifestation of thought) in terms of the truth of atomic sentences,[21] where atomic sentences are formed as the concatenation of a predicative (or relational) expression and the appropriate number of singular terms. The explanation of how the semantics of (possibly multiply) quantified sentences depends on the semantics of atomic sentences entails what has become known as 'the generality constraint'. Thus: "[Frege] is making the assumption that, whenever we understand the truth-conditions for any sentence containing (one or more occurrences of) a proper name, we likewise understand what it is for any arbitrary object to satisfy the predicate which results from removing (those occurrences of) that proper name from the sentence, irrespective of whether we actually have or can form, in our language a name of that object ... [Frege is assuming that] from a knowledge of the truth conditions of 'A(c)', we can derive a knowledge of the conditions under which the predicate 'A( )' will be true of all the objects in a domain, when we do not and could not have the means of referring to each of

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[21] See chapter 2 of Dummett (1973, 1981), especially pp. 9-19. Atomic propositions are semantically basic, eg. " Given a basic fund of atomic sentences, all other sentences can be regarded as being formed by means of a sequence of operations, which are of three kinds: the application of sentential operators to sentences to form new sentences; the omission from a sentence of one or more occurrences of a proper name to form a one-place predicate; and the application of a quantifier to a one-place predicate to form a sentence" (p. 16).

those objects" (Dummett (1981), pp.17-19)[22]. From this it follows that, where a thought is completely grasped by a subject (ie. its formal expression in a logical language is fully understood by the subject), the understanding of the predicative component of the semantically basic atomic proposition(s) is conceptually independent of the understanding of the singular component, and conversely. That is, mastery of who or what an atomic proposition is about cannot, where perfect understanding is in question, be dependent on mastery of which property is being predicated. And mastery of what property is being predicated in an atomic proposition cannot be dependent on understanding which individual it is being predicated of. Conceptual mastery of the singular and predicative components is independent of each other. What is interesting is that this commitment to generality follows directly from the explanation of the dependence of the semantics of quantified sentences on the semantics of atomic sentences.

Evans (1982) elevates this commitment of semantic theory to a constitutive claim about the S/Ojectivity of thought: "we cannot avoid thinking of a thought about an individual object *x*, to the effect that it is *F*, as the exercise of two separable capacities; one being the capacity to think of *x*, which could be equally exercised in thoughts about *x* to the effect that it is *G* or *H*; and the other being a conception of what it is to be *F*, which could be equally exercised in thoughts about other individuals, to the effect that they are *F*. ... If we make the claim [that the thought that *a* is *F* and the thought that *b* is *G* are structured in this way], then we are obliged to maintain that, if a subject can entertain those thoughts, then there is no conceptual barrier, at least, to his being able to entertain the thought that *a* is *G* or the thought that *b* is *F*. And we are committed in addition to the view that there would be a common partial explanation for a subject's having the thought that *a* is *F* and his having the thought that *a* is *G*: There is a single state whose possession is a necessary condition for the occurrence of both thoughts. ... It is a feature of the thought-content *that John is happy* that to grasp it requires distinguishable skills. In particular, it requires possession of the concept of happiness—knowledge of what it is for a person to be happy; and that is something not tied to this or that particular person's happiness. There simply could not be a person who could entertain the thought that John is happy and the thought that Harry is friendly, but who could not entertain—who was conceptually debarred from entertaining—the thought that John is friendly or the thought

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[22] Dummett explains why this point is not unique to a Fregean semantics, but applies equally to contemporary semantic explanations.

that Harry is happy. Someone who thinks that John is happy must, we might say, have the idea of a happy man—a situation instantiated in the case of John (he thinks), but in no way tied to John for its instantiation" (Evans (1982), p.75 and pp.102-3).

In this transition from Dummett's Fregean Semantics to Evans's Generality Constraint, the semantics of quantified sentences has forced a particularly strong reading of the subject / predicate structure of truth bearers: entertaining a thought is now held to entail that one's understanding of which property is attributed to the object is entirely independent of one's knowledge of what it is for any particular thought to be true: it must be independent of one's knowledge of what it is for the property to be instantiated in any particular case. This effectively disconnects conceptual knowledge from experiential abilities (recognitional and discriminatory abilities) and practice. Conversely, human embodied experience and practice can count as the thinking of thoughts only *derivatively*; as metre rules in everyday use count as metre rules only insofar as they are the same length as the standard metre rule in Paris, or as—in one theology—animals have souls only insofar as they are made in the image of God. Embodied practice counts as representational only to the extent that its constituents approximate the conceptual independence required by the generality of thought. Like the theist's animals, embodied practice is assessed by standards quite external to its own nature.

The neo-Fregean generality constraint provides for a clear conception of S/Ojectivity, and thereby for a workable conception of the representational as what can be treated as conforming to the autonomous standard of generality for the purposes at hand. Since the world is what is presented in S/Ojective content, and mind is the subject of S/Ojective content, generality yields a certain metaphysical view of the mind /world relation. And the gap between thoughts proper (which meet the standard) and what counts as representational for the purposes at hand, propagates an epistemological gap between the real world judged of by the rational thinker, and the everyday world through which animal practice stumbles.[23] So the important question for us becomes: *Is generality what S/Ojectivity consists in?* Is there an alternative account of S/Ojectivity grounded in experience, as generality is grounded in thought taken as prior to experience?

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[23] The propagation of this gap is of immense importance as a foundation in representational theory for society's ubiquitous appeal to scientific experts, conceived of as having access to something other than the human world.

The notion of nonconceptual content fixed by canonical specifications which refer to the realm of embodiment does not by itself help with this. Such a notion doesn't provide an alternative conception of S/Ojectivity. It is therefore vulnerable to the charge that realm of embodiment specified contents can only count as representational if they are treated as input to a conceptual system which satisfies the generality constraint. If the nonconceptual contents are not assessed against a background of conceptual contents then they fail the test of generality. What we theorists describe as the experiencing organism's perception of a mug would not, for the subject, be a perception of a mug, because it would not be a perception of an object at all. The presentation of which object it is which is seen is not at all independent of the presentation of how the object appears (and conversely), as the presentation of *John* was independent of the presentation of *a happy man* in the thought that John is happy. This is why Evans introduces a quite separate layer of representation—"the fundamental level"— not specified by reference to the realm of embodiment, but by reference to the realm of reference. A subject must exercise "basic conceptual skills" [p.227] in order to transform a nonconceptual experiential content into a conceptualized judgment. The experiential representation "serves as the input to a *thinking, concept-applying and reasoning* system" [p.158]. Seen this way, Evans's transformation of Fregean representational theory is only from the priority of thought over experience to a no-priority theory.[24] If experience is to be prior, then we have to do much more than develop a mode of specification of content appropriate to experience (eg. realm of embodiment specifications). We have to show that realm of embodiment specification can support a notion of content which is not parasitic upon thought content.

(5) **Feature-Placing**: Significance without Satisfaction

Since thought is *introduced* as that for which the question of truth can arise, the priority of thought entails that the conditions for a representation being a truth bearer (the S/Ojectivity conditions) are presupposed at the start of representational theory. Hence, under the equation S/Ojectivity = generality, something counts as representational only as it is aimed at the independent standard of generality. But if representation in experience is to be prior we cannot start our representational theory with given conditions of

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[24] cf. Peacocke (1992), pp.127-8 where he suggests an inter-dependence version of no-priority: "nonconceptual content is not a level which is completely explicable without reference to conceptual content at all... At the most basic level, conceptual and nonconceptual content must be elucidated simultaneously".

S/Ojectivity (for to start with them is to start with representation in thought). We need to start with a medium of representation which (pre-theoretically) is not (need not be) S/Ojective and then consider how S/Ojectivity might be built up in such a medium.

It might turn out that the S/Ojectivity that we construct is generality, or it might not. If it does, then we shall have to consider whether the representationality of the medium with which we began can survive independently of being aimed at this standard of generality. For if the representationality of the medium is explanatorily dependent on the concept of generality, we shall have to abandon our attempt at developing a theory of representation in which experience is prior to thought. But if it doesn't turn out that the constructed S/Ojectivity is generality, then we shall be working within a theory in which experience is prior to thought, and for which thought content is *not* identical to experiential content which satisfies the generality constraint. We should then have to characterize the new notion of thought content (and therefore a new notion of truth) and consider what interpretation the new representational theory gives to generality, and what role it assigns to Fregean thought contents.

So let us start our representational practice—for which the conditions of S/Ojectivity are not given—without the norm of truth (or other norms given in terms of the realm of reference; eg. veridicality). But this looks hopeless. What could it be to be a content which does not bear a truth value (and is not a constituent in a content which presents the world S/Ojectively and has a truth value)? After all, if something is a content it is a presentation of the world. And any presentation of the world is a presentation of it *as* being one way or another. But if the world is the way in which the content presents it as being then the content is true, and if the world is not the way in which the content presents it as being then the content is false. What sense can we give to the phrase "a non-S/Ojective presentation of the world"?

In a linguistic medium it is subject / predicate structure which makes for the possibility of truth, for an atomic statement will be true iff the object referred to by the subject has the property referred to by the predicative term, or if the objects referred to by the subject terms stand in the relation referred to by the predicative term. (Generality, as we saw, provided for a particular interpretation of subject / predicate structure). So we should consider whether a language can function successfully even though the language does not have subject-predicate structure.

Strawson introduced the idea of a "feature-placing" language.[25] The paradigm examples of feature-placing sentences are "it is snowing" (or 'snoweth'), "it is raining here", "wetness!", or "jam here". The terms "snow", "rain", "jam" and "wetness" do not serve to characterize particulars which are introduced elsewhere in the sentence. Snow, unlike being made of snow, is a kind of stuff not a property of a particular. Nor are these terms sortal universals like 'man' or 'rabbit'. Sortal terms do not serve just to introduce a feature, but rather a sortal property or kind, for the identity conditions for what 'man' applies to are determined within the meaning of 'man' itself. The terms 'man' and 'rabbit' divide their reference, so that it makes sense to ask 'how many men are there?', or 'how many rabbits do you see?' but it does not make sense to ask 'how many jams are there?' or, 'how many rains do you see?'. These latter sentences can be interpreted only by adding criteria of identity and distinctness to the features; thus 'how many *pots of jam* are there?' or, 'how many *rainstorms* do you see?'

Strawson's original idea was that subject / predicate sentences are semantically complex in relation to feature-placing sentences. Whereas the semantics of subject / predicate sentences involve the identification of a particular (an object) and the ascription to it of a property, the semantics of feature-placing sentences do not involve the identification of a particular, and hence do not involve the notion of properties of particulars. Rather, they involve the placing of features. Typically we can form a feature-placing term by taking a term and stripping from it its conditions of identification and re-identification. For my purposes, a feature-placing sentence is a sentence for which sensitivity in experience to the assent conditions of the sentence does not require knowledge of any identification or re-identification conditions associated with the (feature-placing) term from which the sentence is formed. Or: for which the ability to discriminate a feature does not require the ability to identify something as a countable (referrable) item, nor the ability to re-identify it as the same again; it does not even require knowledge of what it would be to re-identify it. Whereas the semantics of subject / predicate sentences involves *instance identification*, the semantics of feature-placing sentences involves *incidence indication*.[26].

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[25] See Strawson (1971) "Particular & General" and (1959); pp.202-225. Don't confuse this notion of features and feature-spaces with sense-data, or with semantic features in linguistics, or with microfeatures in connectionism, or with the dimensions of a connectionist hidden-unit activity space.

[26] Glouberman (1976)

An *instance* of soggy or bliss or loud can only be spoken of once sortal concepts (meringues-thrown-at-face, wedding-day, bang, etc.)—concepts which divide their reference—are injected into the feature-placing repertoire. So, if we consider sentences which are restricted to feature-placing, then the semantics will have no use for a particular being an instance of a property, hence no use for logical subjects or for predication. The significance of such sentences is restricted to the general indication of the presence of features.

One can become confused about what is at stake here by supposing that these remarks depend on weight being put on a distinction between a particular and a process, or on a distinction between a localized particular and a distributed particular. But this is not so. The identification of a particular is, essentially, the identification of something which can be reidentified over time and through space.[27] The possibility of spatial and temporal reidentification is as appropriate in the case of a tropical storm as it is in the case of a chair. A particular, then, is something—either process or object, either localized or distributed—whose identification entails the possibility of *re*identification.

Strawson uses the example of a 'naming-game' in which children respond to "presence of cat, or signs of the past or future presence of cat, but do not think identifyingly of particular cats." The ability to make identifying references to cats involves the ability to recognize cat-feature; but the ability to recognize cat-feature does not require the conceptual resources for identifying reference to cats. "We can readily enough acknowledge that the introduction of particulars is so fundamental a conceptual step as to leave the primitive pre-particular level of thought as, at most, no more than vestigial in language."

We could also picture a non-linguistic mode of activity in which a theorist would use feature-placing sentences to describe the psychology of a simple marine animal. Suppose that the animal was capable of experience but had no use for the experiential detection of anything more than 'warm / cold : in front / behind' and 'bubbly / clear : in front / behind' as it floated through its liquid medium. The terms 'in front' and 'behind', which register the animal's experience, would gain their significance entirely by means of their connection with the two forms of locomotion available to the animal: move forwards and move backwards: they wouldn't function to identify places. (Their

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[27] See Strawson 'Sounds' in Strawson (1959), and Evans 'Things without the Mind' in Evans (1985).

significance would be exhausted by a realm of embodiment specification). These connections would exist in virtue of connections between experiential 'assent' to the eight possible (two-part) feature-placing sentences and the locomotion of the animal. It would be quite unwarranted to suppose in such a case that experiential responsiveness to 'warm' and 'bubbly' involved a sensitivity to conditions for re-identification. (And inappropriate to attempt to apply the generality constraint).

Because there is no warrant for re-identification or for generality, the simple experiential representation system of the marine animal (or the naming-child) is not S/Ojective (see footnote 17). Hence the feature-placing sentences of the system do not have truth-conditions. Instead we speak of "assent conditions" (or, with even less commitment, "experiential activity threshold conditions"); that is conditions in which a feature-placing ‘subject’ will 'assent' to a sentence of this type. And, as theorists, we may characterize these assent conditions by means of other sentences (not themselves feature-placing sentences) which have truth conditions. But this by no means entails that feature-placing sentences themselves have truth conditions.

The basic argument for a gap between truth conditions and assent conditions is straightforward. Given the connection between S/Ojectivity and the reidentification of particulars, the content of feature-placing sentences is not S/Ojective content. But thought content is essentially S/Ojective content, and a thought is introduced as that for which the question of truth arises: the truth-bearer. Hence we only talk of the truth-conditions of a feature-placing sentence in a sense which is derivative on the conceptually sophisticated language of the theorist. But we want the semantics of a language to characterize (no more than) what is *understood* by masters of the language in virtue of being masters of the language. Hence truth has no role in the semantics of a feature-placing language.

It is not a rebuttal of this argument to observe that there may be a fact of the matter as to whether it is raining at a certain location, and a paradigm feature-placing sentence is standardly used to assert precisely that. For, if a sentence like “it is raining” is being assigned a semantics according to which its significance is that at a particular location it is raining, a significance which may be either true or false, then it is being assigned a subject-predicate semantics rather than a feature-placing semantics. Under such an interpretation, there is an implicit subject-term which serves to introduce a particular in the ordinary way. The only difference from a paradigm subject / predicate

sentence, like 'John is bald', is that the subject term introduces a place rather than a material object. This, for Strawson, is to ascend to a higher semantic level than is warranted by mere feature-placing. For Strawson, if there is an adverbial demonstrative, like 'here', present in the sentence, then if the sentence is to be assigned a feature-placing semantics, the adverbial demonstrative does not introduce a particular location but rather serves to indicate the general area of incidence of the feature in question.[28] Incidence indication does not require place identification: no identifiable and re-identifiable particular is introduced. A placing of features is not a reference to a place of features.

If there are truth conditions for a sentence of the language, there must also be falsity conditions. In a classical semantics, these will be the conditions under which the sentence is *not* true. But then—given the appropriate syntax— it must always be possible to form contradictions in the language by forming the conjunction of two sentences, the conditions for the truth of one of the sentences being the falsity conditions for the other sentence. In the classical case, this will be achieved simply by the use of a negation operator. So if 'wet here'—given a feature-placing interpretation—has classical truth conditions, then 'wet here and wet not here' should be a contradiction. But it is not.[29] The conditions under which 'wet here' are assented to are quite compatible with the conditions under which 'wet not here' may be assented to. The only way to make possible the formation of contradictions in the language is to provide a semantics that allows for the identification of particular places or—correlatively—the identification of particular instances: wetness is here and wetness is not here; the same location being picked out by each use of 'here'. But instance identification (and place identification) is unsupportable at the pure feature-placing level.

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[28] Later, we will enquire more closely into what this means. But we already have the apparatus to state the main point: the adverbial demonstrative in a feature-placing sentence introduces a location content into the content expressed by the whole sentence, where the location content is canonically specified by reference to the realm of embodiment. In the case of the marine animal it would be specified by reference to dispositions to locomote in one effector-sensitive way, rather than another. But no location content which is canonically specified by reference to the realm of reference is thereby made available to the subject: sensitivity to which place is in question is not independent of sensitivity to the feature. The generality constraint is not satisfied and so this is an example in which part of the realm of embodiment is given in experience without any part of the realm of reference being given.

[29] cf Glouberman (1976).

What is lacking from the feature-placing language, which results in the inability to produce contradiction in the language, is the capacity for boundary conditions for the feature. If the assent conditions of a sentence or its negation are sensitive to the general incidence of the feature, but are not sensitive to the presence or absence of the feature *throughout* a bounded region, then the semantics for the language should not appeal to objects and to predication. That is, the ability of a language to form contradictions entails the sensitivity of assent conditions to the presence or absence of a feature throughout a bounded region: a necessary condition for a subject / predicate semantics.

Evans (1985), in his article "Identity and Predication" brings out these connections by considering how the radical interpreter should treat sentences formed from concatenated terms of the alien language.[30] What pattern of assent conditions would the interpreter have to find in order to treat the concatenation of F and G as predication? Evans writes:

> When we look at the assent conditions, the following picture emerges. We find that it is not sufficient for assent to (F G), eg., 'White Rabbit', that F and G both be assented to nor that there be an overlap between the features associated with F and with G. For example, 'White Rabbit?' can be dissented from even though some of the exposed rabbit stuff is white, even, indeed, though a decent-sized (rabbit-sized) continuous portion is white, as when, for example, several brown rabbits are so organized that their white tails are contiguous.
>
> What is required for many of these compounds is that the F feature be distributed in a characteristic way in relation to the boundaries of a SINGLE object whose presence prompts assent to the queried G terms. And when the simple overlap principle does seem to work for the affirmative sentence (as it does, for example, for the compound 'Bloodstained Rabbit') we find the assent condition of the internally negated sentences ('not-bloodstained Rabbit') again show a sensitivity to the boundaries of an object, for assent requires the

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[30] I have doctored the quotation which follows by substituting "assent conditions" in several places for his "truth conditions". Where Evans uses the term "truth conditions", he is speaking from the theorist's perspective, whereas I am concerned with the significance of the language for a subject who is master of just that language.

ABSENCE of the associated feature from the entire exposed surface of that object.

The G term is ruled out as a feature-placing term like 'rabbiteth', in favour of linguistic items which require a subject / predicate semantics, on the basis of the observed sensitivity of the assent conditions of sentences containing a concatenation of the G term and an F term to the presence or absence of the feature associated with the F term throughout a bounded region whose characteristics are determined by the G term. It is this requirement of sensitivity to the boundary which provides for the possibility of contradiction. In a semantics of mere feature-overlap, where there is no dependence of assent conditions on the distribution of a feature throughout a bounded region, there is no possibility of contradiction. Thus 'whiteth rabbiteth and not whiteth rabbiteth' is not a contradiction, since it can be assented to when there is experiential sensitivity to both an overlap between whiteth and rabbiteth, and also to some rabbiteth which is not whiteth. But if the assent conditions to sentences containing the term interpreted above as 'rabbiteth' is associated with sensitivity to a bounded region of feature-space, then the bounded region "delimits that area in relation to which one or the other, but not both, of a pair of contradictory predicates may be chosen".

If it seems odd at first to suppose that the notion of a bounded region is not available at the pure feature-placing level, it may help to recall the conceptual inter-dependence between the characteristics of location and the characteristics of what may occupy locations.[31] In particular, if the location occupants are features, then locations will have *scatter* in the same sense as features are scattered. Such scattered locations are not identifiable or reidentifiable, and so 'reference' to them does not depend on sensitivity to bounded regions of feature-space. It would be as if in throwing the contents of a bottle of glitter, our only way of identifying the location of fragments of glitter-in-flight consisted in our ability to locate the fragments themselves. But, as things are, we cannot identify or reidentify glitter fragments-in-flight: the best we can do is to provide a general indication (a sweep of the hand) of the incidence of the scattered glitter feature. (Imagine that no instruments are used, and that the location of glitter-fragments cannot be identified against a background of objects). If we were to think of the scatter-locations on the model of particular places, then, as the glitter falls, we would have to say that the locations ceased to exist. But this is unnecessarily paradoxical, for it results from

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[31] Strawson (1959) p.37 and see Evans (1982) §6.3.

employing a subject / predicate semantics where one is not warranted. We are not talking, in such a case, of something that ceases to exist as it loses its feature, for there was no something in the first place: no distinguishable and recognizable place or region.

For a feature-placing 'subject' *all* experience is as glitter-in-flight experience is for us (without the use of backdrops, etc.) But if all experience is 'feature-glitter' then the experience does not present itself to a subject. If there are no experiences with contents of objects and places, then there are no resources for distinguishing between the contribution of the world and the contribution of the subject, as the experiencing organism moves around in its environment. If the environment is not given in experience as a world of objects, then the subject is not given in experience as one amongst those objects. A failure of S/Ojectivity is a failure of subject as well as a failure of object. Hence a feature-domain is a unitary phenomenon that contains within it (but not as constituents) what—as theorists employing a higher level of analysis—we would identify as the phenomena of subject, object, location and property. But these phenomena-of-content are explanatorily distinct only at the conceptual level of analysis of content. At the nonconceptual level of analysis of a feature-domain the distinctness of object, subject, location and property is an explanandum. The explanatory apparatus (the primitives) of this level describes content-phenomena for which there are no distinctions between object, subject, location and property. There is only the feature-domain itself, and trails through it.

This suggests that we treat 'feature-placing experience' not as *experience within a consciousness* (which would require a subject / object distinction) but as *environmental experience*. Here I intend 'environmental' in the sense of 'in the *environs* of mind', where "environs" is used as it might be in "you may find Robin in the environs of L.A.". Searching successfully for Robin might depend on not attempting to employ a sharp distinction between the region within the city, and its surround, or between L.A. and Santa Barbara or Irvine. Similarly, way-finding in environmental experience need not require applying a mind / world distinction: a distinction between what is in a subject and what belongs to the object, or between one subject and another. In section 7, I interpret the abilities of the Realm of Embodiment as abilities to find one's way (the building and use of feature-boundaries) within environmental experience. But first I want to introduce a general metric which can be applied to way-finding abilities.

(6) Environmental Ability Range

Of the four anchors of the representational theory of *cognitive trails*, two of the anchors are now in place. These are first, the Evansian strategy of the nonconceptual specification of representational contents by reference to the realm of embodiment. And secondly, the Strawsonian strategy of a representational medium based on feature-placing. We need now to gain a much better understanding of what is involved in the construction of the conditions of S/Ojectivity within a feature-placing medium. We saw that the introduction of predication, and the possibility of contradiction, required sensitivity to feature-boundaries. I develop this idea in the course of the next three sections by introducing the third anchor, which I call "the PD ratio of cognitive trails through environmental feature-space" and the fourth anchor, "stabilization".

But let me begin with "PD ratio". Forget, for a moment, about experience and thought. I start this section with animals and their abilities to navigate around their environments. How might we classify the range of animals' ability to find their way?

In this section I shall presuppose as little as possible about the theory of representational content, so we are to think of the range of abilities specified operationally. For example, if a system was placed *ab initio* at a particular location *A* in the space, would it be able to find its way to an arbitrary location in the space, *G*? Of course, things cannot be as simple as this. We must stipulate that the system finds its way to the goal location in reasonable time without exhaustive search of the territory. We must stipulate that the system finds itself at *A* without any knowledge of how it moved in relation to other points in the territory in order to arrive at *A*. For example, we could specify that the system must emerge at A through a manhole cover, having arrived at the manhole by traversing a system of subterranean channels (where the structure of the channels carries no information about the structure of the terrain above). Then there is the trickier matter of how the goal location is specified for the system (it must cease searching when it arrives at the goal). Here it is hard to abstract altogether from representational notions. Let us say that the system can recognize the perceptible appearance of the goal location when within sensory range and unobstructed, and that the goal is specified to the system in terms of this perceptible appearance. But these are complications. What is important is that we can now straightforwardly establish a spectrum for the abilities to get from *A* to *G* which range from the worst case to the best possible case.

The worst case (ie the most minimal navigational ability) is that in which the system can only find its way to *G* when it can perceive *G* from *A*. In such a case the system's ability does not go beyond what is required for the system to know its goal (this is why it is the *worst* case). Suppose that the system can perceive the goal when and only when it is n or less metres from it. Then we may represent the *zone of competence* as follows:

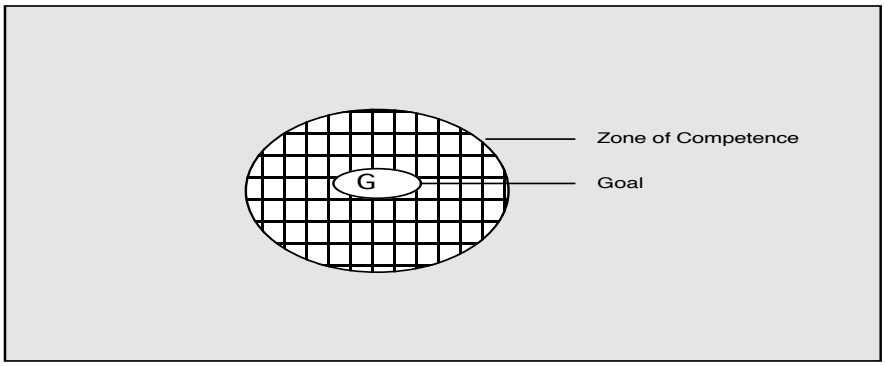

Figure 1: Worst Case

The whole territory is represented by the dotted rectangular region, the goal by the 'G' ellipse, and the zone of competence by the region containing all points whose distance from G is less than or equal to n metres.

The zone of competence is, thus, the set of points within the territory which is such that the system can navigate successfully to *G* if, and only if, the start location, *A*, is at one of the points in the set. The worst case is that in which the zone of competence is the set of points from which *G* is perceptible. The system's ability is less restricted when it is capable of recognizing one or more landmarks from its start position, and the goal from each of the landmarks. The zone of competence might then be represented as follows:

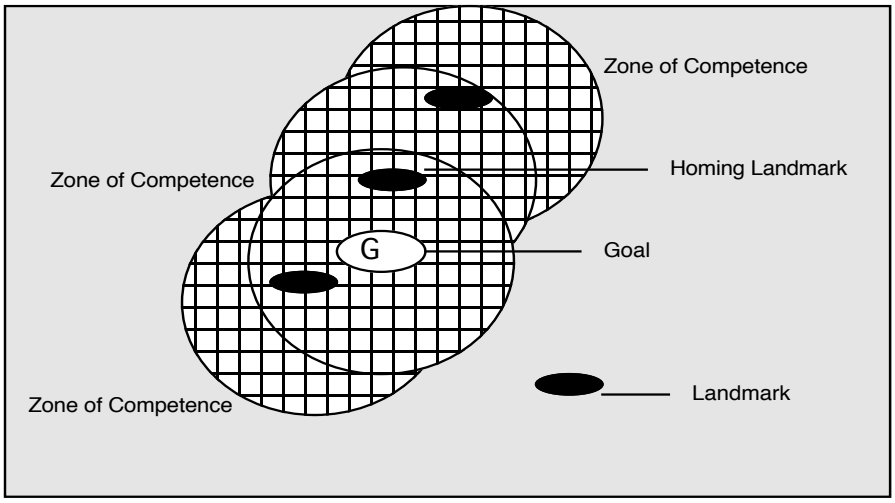

Figure 2: Route-Based Ability to Navigate

The system has the ability not only to recognize the goal on the basis of perception, but also a number of landmarks. A homing landmark is either a landmark from which the goal is perceptible, or else it is a landmark from which a homing landmark is perceptible. Then the zone of competence is extended by a circular set of points, radius n metres, centred on each homing landmark.

Thus a system has a route-based ability to navigate about its territory when its total zone of competence is the non-overlapping sum (union) of more than one local zone of competence; where each local zone of competence is the set of points from which either the goal or one of the homing landmarks is perceptible. A homing landmark is either a landmark from which the goal is perceptible, or it is a landmark from which a homing landmark is perceptible. Figure 2 represents three homing landmarks and one non-homing landmark.

There are many ways in which the system's ability can be extended beyond the case in which it has a simple route-based (piloting) ability to navigate. Most obviously, it could master many possible routes to the goal by mastering many landmarks. More interestingly, it could be equipped with certain search skills through which each local zone of competence could be extended. For example, it might be that the system could search in the space m metres from each point in the periphery of a local zone of competence. The region of extension is that region in which the system does not get lost, ie which is such that the system can find its way back within reasonable time from any point in the extension to some point in the local zone. In some cases having an extended local zone of competence will transform the landmark on which the zone is based from

being a non-homing landmark to being a homing landmark. And thereby substantially extend the global zone of competence.

Since the total zone of competence is operationally defined, and we may suppose that the whole territory is fixed pragmatically by reference to the circumstances of the system, we may classify a range of abilities in a way that depends only minimally on representational notions. I shall say that *the degree of perspective-dependence of the system's ability to locate an arbitrary goal within the territory is given as the ratio of the total zone of competence to the whole territory*. I call this "PD ratio". The system's ability is maximally perspective-dependent (start-location dependent and route dependent) in the worst case which I have depicted in figure 1; in cases like this the PD ratio is close to zero. The system's ability is maximally perspective-*in*dependent in the best case depicted in figure 3, in which the PD ratio is equal to 1. And the system's ability has intermediate perspective-dependence, and an intermediate value for the PD ratio, in figure 2-type cases.

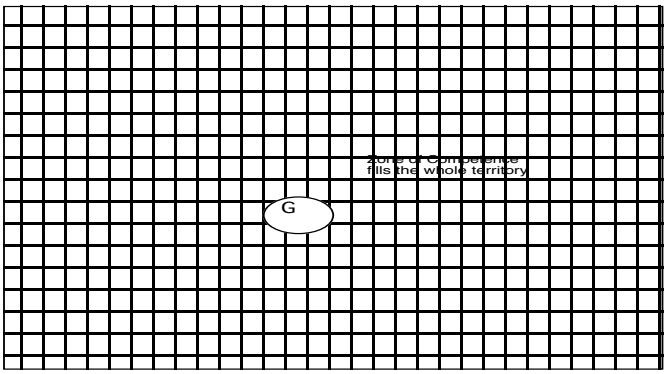

Figure 3: Best Case

The zone of competence has spread to fill the whole territory. There are no 'privileged' positions within the space such that the system must start at one of the privileged positions in order to locate the goal, or must proceed to a privileged position in following a route to the goal. The best case is that in which there are no privileged positions *wherever* the goal is located.

(7) Cognitive Trails

Apply the metric introduced in §6 not to an objective spatial territory, but to an environmental feature-domain, as introduced at the end of §5, in which there are no given distinctions between object, subject, location and property. Hence the abilities of the

realm of embodiment (RE) by reference to which nonconceptual contents are specified (§3) are not capacities of a human body / mind (or a biologically given organism with a bodily boundary), but are way-finding abilities through an environmental feature-domain. Since the way finding and that through which a way is found are not—at this elementary theoretical stage prior to the subject / object distinction—given separately, we can take the RE specified abilities to be *identical* to trails through an environmental feature-domain: a structuring of a feature-domain into a feature-space. The way-finding abilities are the environmental structures which make way-finding possible. *Nonconceptual content is (the experiential presentation of) cognitive trails.* Thus the strategies of §3 and §5 converge.

The theory does not posit an independent subject who manifests a certain PD ratio for finding a way through an independent spatial environment. Instead imagine a PD ratio for the tracking of trails and trail-blazing through a feature-domain: not a subject's tracking trails in the S/Ojective world, but the phenomena of tracking trails and trail-blazing themselves. Trails are both person-made and world-made, and what makes persons and worlds. Trails are in the environment, certainly, but they are also *cognitive* objects. A trail isn't just an indentation in a physical surface, but a *marking* of the environment; a signposting for coordinating sensation and movement, an experiential line of force. Hence the marking is *both experiential and environmental*.[32]

Let us suppose that the entire feature-domain is involved in the presentation of a single object.[33] I don't mean that a point in the feature-domain corresponds to a *part* of the object, such as a corner, for parts of objects are objects too. Rather, we can think of a point in a feature-domain as being an experiential moment. (Speaking conceptually, such a moment might be a particular object standing in a multitude of particular relations, not

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[32] Our ordinary notion of trails is not precisely what I want here; that's why I use the term 'cognitive trails'. But the ordinary notion of trails is suggestive of the twin-aspects of experience and environment. In this respect the notion of trails is similar to the notion of tools: trails are cognitive objects in the same way in which *tools* (qua tools) are; perhaps trails are the first tools. Note also that the fact of trails being cognitive objects is not dependent on their being taken to be so by primary intentional beings. We are to explain the intentionality of persons in terms of the 'intentionality' of trails, not vice-versa.

[33] This is misleading in two ways: first, the spaces won't divide up neatly into the spaces of distinct objects since featural-positions within a space will be invoked for many objects. And, secondly, we must consider higher-level spaces, in which positions do correspond to objects or places. See below.

all of them specified, as given in the experience of a particular subject, in a particular context. But attempts to do conceptual justice to nonconceptual representation are never very satisfying). So let us imagine very simple objects that have no parts. I want to recommend that we think of the relation between features and objects as distributed: many points in the feature-domain correspond to a single (simple) object, and each point in the feature-domain corresponds to many such objects. That is, objects are *distributed* over features. We need now to understand how objects can be recovered from features, without in the process presupposing an autonomous and unexplained capacity for thought.

Basic to such explanation is the tracking of trails through the feature-domain. A trail-tracking through the domain may be a coordinated interaction between subject and object (as a conceptual theorist would describe it), but one in which subject and object need not be discriminated participants. I reach out and grasp a mug, and thereby a trail is tracked. The trail is the coordination. Each trail occurs over time, and is a manipulation or a trial or an avoidance or a capture or simply a movement. It is entirely context-dependent: the pressure successfully applied to a wall does not entail the ability to apply pressure to a wall in general (in any context), and it doesn't entail the ability to act appropriately with respect to a wall in any circumstance and given any kind of goal. Yet a trail is not transitory (although a tracking of a trail is): the environmental marking persists and thereby the ability to navigate through the feature-domain is enhanced.

As multiple trails are marked, some trails intersect. Since I want to explain the structuring of a feature-domain into a space of feature-points in terms of trails (rather than vice-versa), I don't want to explain the intersection of trails in terms of their *crossing at a point*. Rather, a point in feature-space is explained initially as an intersection of two or more trails. An intersection amongst trails is a moment of enhanced possibility for shifting from one coordination to a distinct coordination: at a certain stage in the manual application of pressure to a stone there is an enhanced possibility to grasp the stone, and at a different stage of the stone-grasping is an enhanced possibility to pick up the stone. Coordinations intersect.

A feature-domain *landmark* ('f-landmark') is an intersection of two or more trails. A feature-domain is structured into a feature-space by means of a network of f-landmarks. f-Landmarks are the first points in feature-space; other points are possibilities for f-landmarks. Points not themselves on a trail come under the *influence* of nearby

trails.[34] There may be a set of points which are under the influence of the same set of trails; this is a *region* of the feature-domain. If the influence of the nearby trails is strong enough and pervasive enough, then the organism would be able to find its way (to an arbitrary goal) within the feature-space whichever point within the region it happened to start from. Such a region therefore has a high PD ratio and is said to be *bounded* by the influencing trails (equivalently: the trails *dominate* the space). Thus boundaries within feature-space are capacities to navigate around the feature-space; capacities which consist in an appropriate network of intersecting trails.

Given the connection between f-boundaries and predication argued for in §5, it would be natural now to explain S/Ojectivity in terms of a feature-space with PD ratio equal or close to 1; or, equivalently, as a region of feature-space which is bounded by a network of trails. We could arrange a spectrum of contents with differing *degrees* of S/Ojectivity varying according to their position along the dimension of PD ratio through environmental feature-space. Contents with a higher PD ratio would be more S/Ojective than contents with a lower PD ratio. A *concept* would be a maximally S/Ojective content; ie. a content with PD ratio equal to 1. Moreover it would be natural to think of the construction of objects (in the world and in society) as the laying down of an intersecting network of trails which dominate a region of feature-space. According to this suggestion, the feature space of an object is that (sufficiently large) region of points in a feature-domain for which there is a network of trails which dominates all the points in the region[35]. In the next section we will see that however tempting this idea may be, it is not correct.

But this much is clear now: low PD ratio of a region of feature-space entails that any attempt to capture its content referentially in sentences of a language would fail the generality constraint.[36] Reconsider our organism finding its way around a spatial territory, having a more or less perspective-dependent ability to find its way from A to G.

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[34] Trails can be tracked in imagination as well as in action. For those who play the game of Go, the notion of 'influence' employed here is like the influence that groups of stones exert over points and regions of the Go board.

[35] A point may be dominated by more than one network.

[36] That is high PD ratio is necessary for satisfaction of the generality constraint. What I reject later is that high PD ratio is sufficient for generality. I also reject both the necessity and sufficiency of generality for S/Ojectivity.

The organism is capable of experience, and is finding its way around on the basis of its experience of the territory. The experience has a feature-placing semantics and we are to ask about the degree of generality of a content entertained by such an experient; a content to which, as theorist, we assign the form *a is F*. Let us suppose that if an adult human were the imagined experient, then they would express the content in language as "that place has a thick, leafy wood". Where the content of the experience is canonically specified by reference to abilities with low PD ratio, the subject's experiential sensitivity to the place is as a multiplicity of trail-dependent landmarks which are the basis of a route-dependent interaction with the theorist-identified place. Given low PD ratio, the network of trails covers only a small region (and dominates none) of the global feature-domain of the place. So we might suppose that this set of f-landmarks is restricted to thick, leafy, woody-featured contexts for (or routes to) the place. Hence the putative 'singular mode of identification' is dependent on the satisfaction of the putative 'predicative' component. The content is therefore not fully structured, and so leaves little room for error. If the theorist-identified place does not in reality have a thick, leafy wood then no place is identified by the experient, and no (conceptual) content is entertained. Failure in the content has led not to error but to loss of any conceptual status.

The experient's sensitivity to the place may not depend *absolutely* on its possession of the placed features but may only partially so depend. We may, for example, imagine that there is a feature-overlap of thick-leafy-woody features and damp-brown features (the experient may be sensitive to the place as both thick, leafy, woody f-landmarks and also as damp, brown f-landmarks). Pursuing one trail through the feature-space, the thick-leafy-woody features may be salient, pursuing a different trail the damp-brown features may be salient. If the experiential content involves placing the thick-leafy-woody feature, then it is no longer true that the experiential sensitivity to the place is exhausted by the sensitivity to the placed feature. Such a partial dependence between the components of the content involves a partial loss of structure, hence a partial loss of the intelligibility of error. (A grasp of the content will succeed if 'approach' is by the damp-brown route, but not if it is by the thick-leafy-woody route). The lower the PD ratio, the greater the loss of the intelligibility of error, the greater the loss of generality.

If it were to work, an account along these lines could be extended to explain the partial satisfaction of the generality constraint by embodied contents. But full generality, and therefore, full-fledged thought contents, would belong to an idealized end-point along this dimension of increasing PD ratio. An ethnomethodological understanding of

local embodied practice (way-finding) would not yield its own conception of S/Ojectivity. Rather, the equation of S/Ojectivity = generality would have been retained, and the ultimate norm which governs representational practice would still be given as external to the practice itself. Thought content would no longer be taken to be prior to the content of experience, but we would have failed to substitute a notion of representational virtue grounded in experiential practice for the norm appropriate to truth-bearers (taken as the primary representational phenomenon).

Any one-dimensional generalization of generality will have this failing. The dimension itself will be at least partly anchored by the idealized end-point of full generality. Therefore we will not be able to explain the norm of generality in terms which are internal to imperfect embodied practice. At best we may explain how embodied contents are able to achieve approximate satisfaction of the generality constraint, rather than provide an explanation of the generality constraint itself. A representational theory which takes experience to be prior to thought must, at a minimum, generalize generality along *two* dimensions. Representational practice can then be logged as a dynamic curve through a two-dimensional space; representational virtue may consist in the pursuit of a trajectory through the space, rather than in proximity to a privileged point or region at one of its extremities. That is, S/Ojectivity would be a way of moving through the 2d space of representationality; a *way-of-being* rather than an idealized end-point.

(8) **S/Ojectivity of Experience**: Generalizing along Two Dimensions

Bruno Latour (1991) introduces the notion of *stabilization* in the context of developing a symmetric metaphysics for science studies. We will see in a moment how the dimension of stabilization is orthogonal to the dimension given by the PD ratio of cognitive trails, and that the two taken together can be used in a two dimensional account of S/Ojectivity.

Latour's discussion is subject to a similar problem to that which faced the 'natural' suggestion that I considered at the end of section 7: taking S/Ojectivity to be PD ratio equal to 1. Latour takes S/Ojectivity to be stabilization, but we need both PD ratio and stabilization in order to give an effective account of predication and therefore of truth. Nevertheless, he provides some instructive examples of stabilization, which he also calls

'black-boxing'. This notion is very similar to the notion of *chunking*.[37] which has a long history in psychology, information theory and computer science, but which is given new life in the context of a representational explanation of the genesis of S/Ojectivity.

Stabilization is a process which takes some phenomenon that is in flux, and draws a line (or builds a box) around the phenomenon, so that the phenomenon can enter cognition (and the world) in a single act of reference rather than as a dynamic and extended trajectory through the flux of feature-space. Latour (1987, pp.130-131) uses the example of a technological transition from an early prototype which can be used only with considerable cognitive effort, to a mass-market commercial product:

> The [early] Kodak camera is made of bits and pieces, of wood, of steel, of coating, of celluloid. The semi-professionals of the time open up their camera and do their own coating and developing, they manufacture their own paper. The object is dismembered each time a new photograph is taken, so that it is not one but rather a bunch of disconnected resources that others may plunder. Now the new Kodak automatic cannot be opened without going wrong. It is made up of many *more* parts and it is handled by a much *more* complex commercial network, but it acts as one piece. .. So it is not simply a question of the number of allies but of their acting as a unified whole. With automatism, a large number of elements is made to act as one, and Eastman benefits from the whole assembly. When many elements are made to act as one, this is what I will now call a black box.[38]

Another example of stabilization comes from Shirley Strum's work on the social negotiation of baboon societies. Baboons have to constantly negotiate their changing social relations with other baboons by means of the proximity of their bodies to the bodies of other baboons depending on their status, size, age, sex and relation: whether kin, consort, friend or competitor (Strum 1987 and 1992). They have to literally track

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[37] eg. Miller (1956) and Dretske (1981), chapter 6

[38] Computational implementation hierarchies of layers of programming architectures provides another technological example of the power of stabilization. Sometimes the stabilization breaks down: in an early word-processing program an unexpected text-processing operation is performed and the virtual blackbox of the wordprocessing program breaks down into a lower virtual level, filling the screen with calculations, finally announcing that it cannot divide through by 0.

changing social relationships by tracking with their bodies in perceptual experience and in action the distance relations amongst the shifting group of baboons to which they belong. They negotiate new relationships partly by changing the network of proximity relations amongst the group. This involves an immense amount of real-time cognitive work:

> A great deal of negotiation may go on between a male and a female leading up to copulation. ... Essentially, he approaches, she can cooperate or not. If she cooperates a successful copulation may be reached in 3 steps. Add one more actor, a follower male who is himself interested in copulating with the female and the network of negotiation expands. The extra male can interfere or not; he can interfere aggressively or non-aggressively. The consort male must now negotiate both with the female and with the challenger. That negotiation might involve enlisting others to help face the challenge, another step requiring negotiation. The outcome of each new bargain destabilizes previous bargains which now must be renegotiated. Even with a limited set of actors and actor characteristics, the social dynamic rapidly picks up speed. Now add another following male or even an interfering female. The new actor changes the balance of power but also makes possible the redistribution of alliances and interference. Each node in the proliferating network requires negotiation. The outcome changes the overall configuration perpetuating the need for further negotiation at other nodes. ... A female gets frightened and screams, her family comes to her defense, a male friend, previously uninvolved, arrives. The male tries to help her and grabs a baby for his own protection (see Strum 1983a, 1983b). The baby screams and the whole troop descends to mob the offending male.

What is so remarkable about this is that all these relationships have to be tracked in the kind of way in which I may negotiate carrying a fragile vase on a chair through a narrow doorway whilst several friends shout instructions on where to place the chair. Few of the balance and other relations can be counted on to remain constant, so all must be monitored simultaneously in experience. In this sense baboon societies are immensely 'complex', but because their objects and relations are not stabilized their societies are not 'complicated' in the way in which human societies are (Strum and Latour 1987). I can pick up the 'phone and give instructions to a banker in England to transfer money into an account in Southern California, without having to worry about the operation of the

telephone, the meaning of my words, without negotiating the relationship of the cashiers at both banks, or questioning the institutions which determine exchange rates. What a fantastically complicated series of artifacts, relationships, institutions and conventions are involved in this transfer, but how simple the process is for me, in the sense of how unlike the complex experiential negotiated monitoring of the baboons. Stabilization is the transition from complex to complicated.

As the above examples make clear, there are times when it may be cognitively counter-productive to constantly monitor the network of trails through an environmental feature-space, to be always sensitive to the need to rejig the trails, build new trails, redirect old ones, ... There comes a time when it is best to stabilize a network of trails so that the space is treated cognitively (functions) as a given unit (an object!), and then build higher-order feature-spaces which contain points that correspond to entire feature-spaces lower in the hierarchy of feature-spaces. A simple animal structures its world around obstacle-avoidance, trajectories of predators and prey, imminence of mates, and expends its cognitive energy maintaining networks of trails for these feature-spaces. A cognitively more sophisticated animal stabilizes the feature-spaces of the simple animal and has them serve as points in higher-level feature-spaces. Many stabilized levels in the hierarchy must be passed before an animal's zone of obstacle-avoidance becomes what is for a human a tree on a hillside. Eventually our environments become structured around textual objects, and complex social objects, as well as 'material' objects. But in principle, each layer can be destabilized perhaps requiring the formation of a new network of trails at the level beneath. A conceptual (or social or technological) revolution may require a cascade of destabilization of several levels of objects melting into negotiable trails through environmental experience at levels lower in the hierarchy.[39]

One familiar and important way in which stabilization is achieved is by drawing a linguistic blackbox around a feature-space: the imposition of linguistic structure on

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[39] I should emphasize that I do not suppose that a human child must begin its cognitive work at the bottom of some logically postulated hierarchy of feature-spaces, nor even that it must start its work at a biologically determined position in the logical hierarchy. Our feature-spaces are determined as much by the environment as by our biology (this is one aspect of symmetric metaphysics), and our environment is structured in ways which reflect our culture and our society. A twentieth century infant navigates trails through twentieth century feature-spaces.

experiential structure.[40] The network of trails provided for the possibility of predication, and then the network is stabilized by a predicate. A region of feature-space starts to function as an object as it is dominated by a network of trails and stabilized by a name. Using the predicate or name is like using the Kodak automatic: in effect we engage in a fiction that the black box has no insides. We treat the linguistic term as expressing a concept (a thought constituent) as if the concept had no internal structure. But, of course, the concept does have nonconceptual internal structure, and the language-user will have to appeal to it when meaning is renegotiated. It is an aspect of the complicatedness of our society that meanings are not renegotiated as often or in the way in which social relations are renegotiated in baboon societies. That this is so is a necessary condition for language. Nevertheless, the renegotiation of meaning may be required by a new social setting, or because of the changing demands of the language-user's project, or else because the concept eventually breaks down (the camera doesn't work). Then the blackbox must be opened and the nonconceptual insides reconfigured; a new network of trails is tracked, a new region of feature-space is dominated, a new possibility for predication is established. As the competing virtues of compactness and flexibility are traded, so blackboxes are opened and closed again. Hence, linguistic stabilization of a feature-space does not necessarily correspond to a high value of S/Ojectivity; rather, it is a stage which may be multiply repeated within the larger process of establishing S/Ojectivity.[41]

For stabilization to provide for a dimension in a 2d graph of S/Ojectivity, we must instrumentalize it as a ratio, just as we introduced a metric for RE abilities to navigate a feature-space. Which metric is used will depend on the nature of the explanatory project in which our representational theory is employed. I had originally thought that stabilization ratio should be a product of *reduction* and *durability*, where durability is a measure of how difficult it is to break down the stabilization and reduction is a measure of the amount of reduction in cognitive effort achieved by stabilization; a measure which is increased by the pre-stabilization complexity of the feature-space and decreased by the post-stabilization cognitive load. But whilst such a measure is important for psychological and social concerns, it is less clear to me that it is what we need for the

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[40] And at a higher-level in the hierarchy, long syntactic sequences of words are stabilized by the title of a journal article, or the name of a theory.

[41] Sometimes technological advance requires a period of lesser stabilization. Introduce networking and file-sharing and the stable System 6 Apple macintosh operating system becomes the sometimes unstable System 7.0

metaphysical and semantic concerns of S/Ojectivity. Stabilization is legitimate as a dimension of S/Ojectivity only if it plays a role in providing for the possibility of predication and truth.

The metaphysically important notion of stabilization captures one component in generality which is essential to predication. When a predicate is applied first to one object in one assertion, and then to a different object in a second assertion, two objects are being asserted to satisfy a single property. There is something that the two objects are said to have in common. But how can we capture this commonality? According to Evans's Generality Constraint there is a single psychological skill or capacity which is being exercised in understanding both assertions; a capacity which is characterised conceptually at the fundamental level of thought. But if we are to explain concepts in terms of the nonconceptual content of experience, we will be unable to appeal to a given conceptual unit in order to account for the commonality. The experiential basis for understanding the predicative component of the two propositions may be very different: different trails are tracked in imagination, even different feature-spaces are employed. (When experience is prior, we cannot assume that knowledge of what it is for an atomic proposition to be true consists in independent pieces of knowledge, one associated with the predicate and one with the subject).

Consider the following example adapted from Lakoff (1987). Suppose that we think that John is angry, that Jack is angry, that Joan is angry and that Jill is angry. Depending on our knowledge of the individuals, we may find ourselves thinking of John quivering, being worked up, and hopping mad; thinking of Jack's gorge rising and his being in a towering rage; thinking of Joan fuming and getting all steamed up, even blowing up or in an outburst; thinking of Jill making inflammatory remarks, doing a slow burn, breathing fire or smoldering for days. In each of these cases we use different experiential images in understanding what it is for the subject to be angry: in the first case of agitation, in the second of rising hot fluid in a container, in the third of intense heat producing steam, and putting pressure on the container which may explode, in the fourth of heat applied to solids producing fire. Our ability to find our way around the feature-spaces for each of these images may be highly perspective-independent, yet we cannot thereby explain that each of the cases involves the predication of anger.

Feature-spaces can be stabilized in different ways, each way leading to different *registrations* into subject and predicate. A fuming and getting steamed-up feature-space

could be registered as a different emotion than the slow burn / smoldering feature-space; but in the example they are both registered as instances of anger. There is a stabilization of these and the other associated feature-spaces as a point in a higher-level feature-space, a point which is labelled with the term 'anger'. Of course other registrations are possible, and a single feature-space may figure in more than one stabilization at a time. But without registering by means of linguistically stabilized feature-spaces a theorist committed to the priority of experience over thought would have no explanation for the common property attributed to John, Jack, Joan and Jill. High PD ratio is necessary for generality, but stabilization is necessary as well.

Stabilization and PD ratio have different functionality. Thus multiple feature-spaces (eg hot liquid, hot solid, and bodily agitation feature-spaces) can be stabilized by a single predicate (anger) and a single feature-space may be stabilized by different predicates (eg. a window recognition feature-space may be stabilized either as a wall opening, or as a glass-filled frame, or as the glass alone). In these cases a high PD ratio is neutral with respect to the kind of registration which stabilization will achieve. Likewise, stabilization and PD ratio are orthogonal. There are cases of both high PD ratio and low stability, and high stability and low PD ratio (see below).

What determines the degree of stabilization of a feature-space by a predicate is not PD ratio but the extent to which a wide range of sentential contexts containing the predicate can be understood without having to break into the innards of the feature-space. Consider the predicate '... is a judge'. In the context "My cousin Harry is a judge" I understand what it is to be a judge without having to break into the stabilized feature-space, and—like the baboons—monitor and renegotiate the networks of trails for the case of my cousin Harry. This is because Harry is prototypically judge-like: he is mature, responsible, intelligent, cautious and is occasionally reported in the newspapers as having done judge-like things. Contrast the following case. When in Stanford last year I met a Frenchman in his early twenties, with an imperfect mastery of English. He told me that he had a girlfriend in France, also in her early twenties, who was "training to be judge". I told him that he didn't mean this, thinking that he had, perhaps, confused 'judge' with 'solicitor' or 'advocate'. But no, in France the legal system works differently and it is indeed possible to *train* to be a judge. So whereas the stabilization 'judge' worked fine in the proposition about Harry, it had to be broken down in the proposition about Marie. I had to re-work my 'judge feature-space', but as a result I gained a larger conception of the

world.[42] We might therefore measure stabilization as the ratio of, for example, sentential contexts in which understanding does not require a renegotiation of the feature-space to sentential contexts in which it does. Stabilization ratio will therefore vary, like PD ratio, between 0 and 1.

We can now log S/Ojectivity along a two-dimensional space given by the orthogonal axes of stabilization of cognitive trails and PD ratio of cognitive trails:

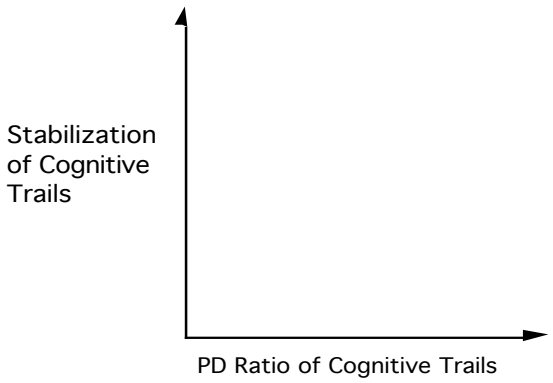

Figure 4: the 2 dimensions of S/Ojectivity

When thought (the truth bearer) is the primary representational phenomenon generality is constitutive of content (§4). But now we have found a way to make experience be the primary representational medium: generality is explained as a vector within the stabilization / PD ratio graph. To assume that generality is the measure of the S/Ojectivity of content is to assume incorrectly that the virtues of stabilization and PD ratio are always in step with each other; that as measures of content they are redundant:-

[42] It would be absurd to answer that I acquired a new concept: 'judge-in-France'. I came to a new understanding that allowed me to see how Marie could have the ***same*** property that I had always understood Harry as having. The early and the later understanding are nonconceptually linked.

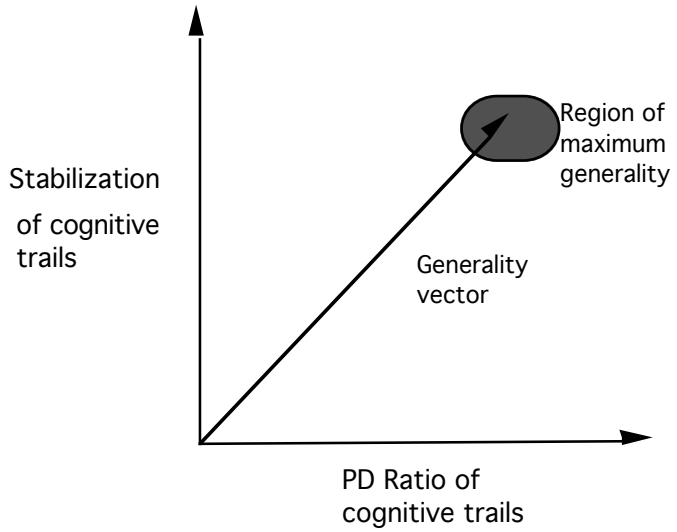

Figure 5: Generality

Generality is a construct within stabilization / PD ratio theory

But, as we have seen, the generality vector cannot substitute for the stabilization / PD ratio space because there are important representationalities which are trajectories through points which do not lie on the generality vector. Stabilization may need to be undone, new trails formed and then restabilized. There are experiential contents—eg paining[43]—which are high on stabilization but low on PD ratio. And, contents which have a PD ratio close to 1 may be assigned a relatively low measure along the generality vector if they are not stabilized. Thus many instances of kinaesthetic experience have a very high PD ratio: one can easily recognize one's own highly contorted bodily positions, recognize the same positions in others, reliably get oneself into the positions, yet they are very poorly stabilized by names or predicates. Without the imposition of syntactic structure onto this hi-ratio experience, nothing determines whether a region of feature-space is to be conceptualized as one property or another or even as a proposition. A well tracked and mapped feature space which is not stabilized could, when stabilized, become (part of) the nonconceptual ground for either the concept *F* or the thought *a is F*. At a level of feature-placing which is unstabilized no distinction is drawn between concepts and propositions.

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[43] See the discussion in Cussins (1990), §4.323. The experiential phenomenon of paining is well stabilized by a name ('pain') but has low S/Ojectivity (environmental painings are not presented to a subject as being public, reidentifiable objects, properties or states of affairs).

The region of maximum generality corresponds to the *formal* conception of mind and world, subject and object. Formality has been a powerful intellectual influence on the twentieth century due to the success of the logico-mathematical technics so impressively advanced by Frege, and its application in computers, political, economic and business structures, and in our conception of ourselves. Formality is the doctrine that insofar as a phenomenon is representational it should involve a maximum metaphysical separation between mind and world, between the representation's subject and the representation's object. The functioning of computers should be explained in abstraction from their application environments.[44] The functioning of mind should be explained independently of appeal to the world in which mind is situated.[45] The explanation of truth in science should be explained independently of its social setting. The nature of objects is given independently of the places they occupy and the subjects which manipulate them. Maximum generality projects onto maximum metaphysical distancing, but displayed on the stabilization / PD ratio graph, the domain of formality appears confined to a tiny region of the whole space which is available for representation.

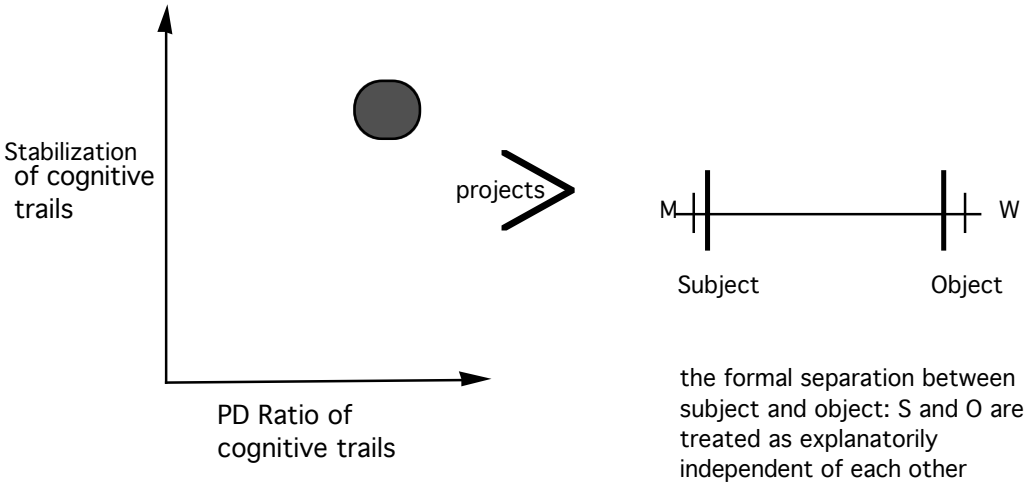

Figure 6: Generality yields Formality

Whenever generality is taken as the measure of S/Ojectivity, the alternative to the situation of figure 6 is as presented in figure 7. Since low generality projects to a minimal separation between subject and object, it leads to loss of contentfulness. Hence the notion of content gets constitutively tied to high generality, so entailing formality.

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[44] For an enjoyable discussion and criticism of this view, see Brian Smith (1985).

[45] A classic locus is Fodor (1981).

The only kind of content is formal content. The only alternative to taking representation in thought to be explanatorily basic is the loss of representational content altogether.

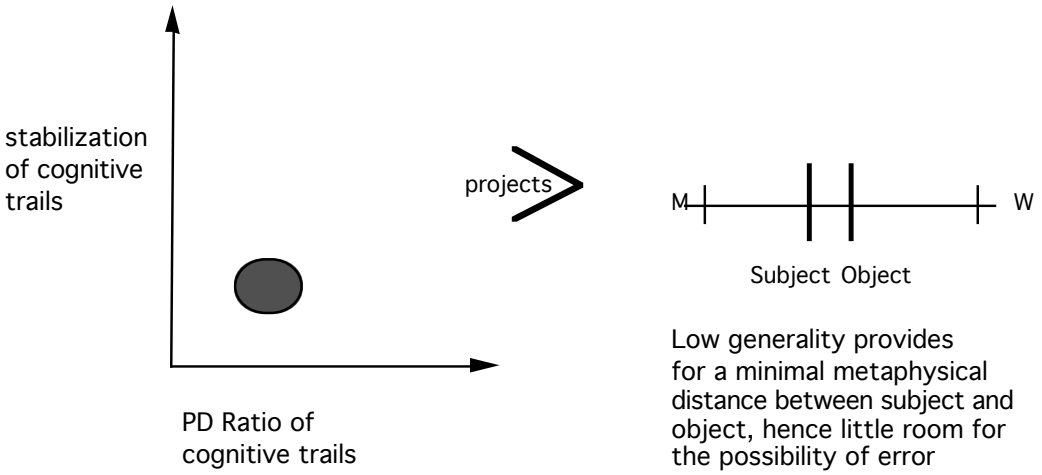

Figure 7: Low Generality yields thin content

But the generalization of S/Ojectivity along two dimensions leads us to consider states of intermediate generality which nevertheless have a high value on the PD ratio dimension, or a high value on the dimension of stabilization. Nonconceptual representational theory encourages the examination of a non-formal metaphysics in which states with genuine content pursue a trajectory of changing values along the stabilization and PD ratio dimensions.

Representational *content* in humans is a function of both experience and language. *Thought* is now reconceived as S/Ojective experience and we can identify S/Ojectivity as a capacity to spiral appropriately (see figure 8) within the 2-d S/Ojectivity space, or, alternatively, as the *way of being* [46]of spiraling appropriately within this graph.

[46] My use of this phrase in this context was suggested by Brian Smith.

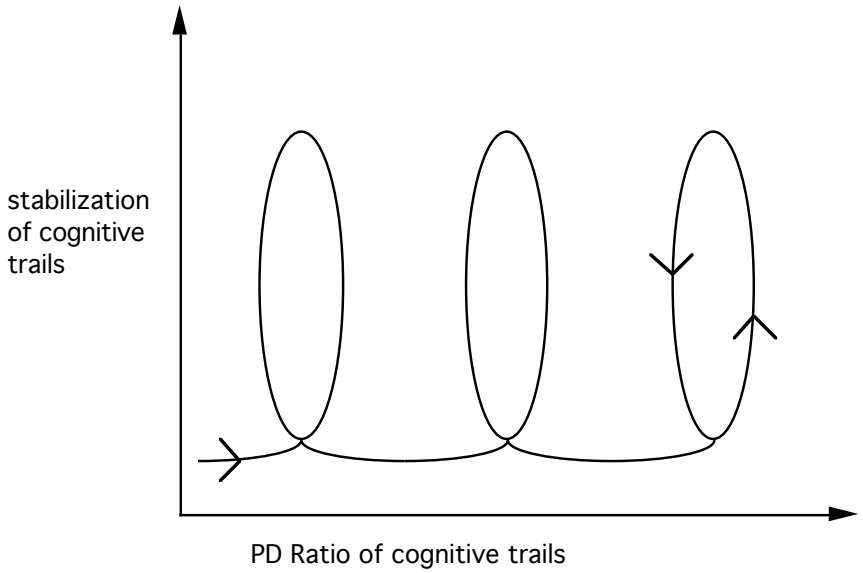

Figure 8: S/Ojectivity in Experience

Spiraling appropriately in stabilization / PD ratio space

As a concept / object starts to build, a network of trails is laid down, structuring a feature-space, yielding an increase in PD ratio. Early success in negotiating the feature-space allows stabilization and hence the possibility of the construction of a new feature-space at a higher level. After a time, the context in which trails had been tracked, or goals established, alters, causing a reduction in PD ratio as stabilization increases. Further advance in S/Ojectivity then requires a reduction in stabilization so that some old trails may be discarded, and new trails formed. After a period of decrease in stabilization, PD ratio starts increasing again as the new network of trails exerts its influence over regions of feature-space. A new cycle of S/Ojectivity has begun. Whereas *generality* was associated with a vector, *S/Ojectivity* is a way of spiraling, trading the sometimes conflicting merits of stabilization and PD ratio in order to maintain cognitive virtue (figure 8.)

An example? When I started to think about nonconceptual content the only language available was that of conceptualist representational theory; the trails through nonconceptual theory space were either sparse or inappropriate to my goals. But as I made progress, new trails were established, and some terms for nonconceptual theory laid down. PD ratio increased as I learnt to find my way around the early theoretical space, and a paper ('C3': Cussins (1990)) started to form. Eventually that paper was published yielding a highly stabilized feature-space: C3 theory. But I then found I had

commitments to the forms and the language of the published theory, which became more and more inappropriate as my research progressed, and goals and research foci shifted. Whereas early stabilization had been helpful, it was now becoming a hindrance. The new things I wanted to say, clashed with old commitments, and I started to lose my way in the theory space. That in turn lead to a destabilization of C3 theory, the establishment of new networks, a start on a new paper, and finally its newly stabilized product which you have in your hands. I speak from experience.

I have introduced some resources for thinking about representation; resources which provide for the possibility of a new registration of the concepts of concept, object and truth. I would like to portray the Fregean and the current registrations of *concept* and *object* as semi-stabilized cusps of different layers of the spiral. *Concept* and *object*, themselves, are not the cusps, but the spiral: historical movement through Cartesian, empiricist, idealist, rationalist, and symmetric, nonconceptual constructionist registrations.

It has not escaped my notice that the theory I have postulated immediately suggests a diagnosis of the force of relativism (the need for multiple registrations together with the idealized end-point conception of representational virtue) and a way to undercut its threat. Full details will be published elsewhere.[47]

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[47] (Cussins, forthcoming). There are two geographical sets of intellectual framework which influence this paper: the Oxonian framework of Michael Dummett, Gareth Evans and Peter Strawson and the Californian frameworks of Bruno Latour and Brian Smith. I also owe special debts to John Batali who responded to my talk at the 1991 Sea Ranch Workshop by discussing trails, and talking over the paper with me; and to Adam Lowe, whose paintings and intellectual enthusiasm are always so invigorating, who co-presented our discussion at the conference on Spatial Representation at the King's College Research Centre in Cambridge. I thank Phil Agre, Charis Cussins, Michael Lynch and the members of my seminar 235 for comments, members of the philosophy department of the University of California at San Diego for discussion, especially Paul Churchland, Philip Kitcher, Bob Pippin and Steve Yalowitz, and CSLI at Stanford for support during the summer of 1991.

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