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Platforms, Patchworks, and Parking Garages: Wilson's Account of Conceptual Fine-Structure in *Wandering Significance*

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I. Introduction

Late TwenCen philosophical theories of concepts confine their movements within a surprisingly constrained Carnapian compass. Already in the *Aufbau*, Carnap had pictured empirical concepts as having contents that were both on the one hand derived from perceptual experience and on the other articulated by their logical form. Quine is a direct descendant of this tradition. But these two broad dimensions—immediate observation causally keyed to environing stimuli and mediating inferential connections—still define contemporary philosophical thought about concepts that is less obviously influenced by Carnap. In some cases the result is one-sided emphasis on one dimension to the exclusion of the other. Fodor is representative of a group that looks exclusively to the first, responsive dimension to understand conceptual contentfulness ("nomological locking" of 'horses' to horses, "asymmetric counterfactual dependence" of representings on represenTeds), taking observational concepts as the paradigm on the basis of which we should understand other sorts of conceptual content. By contrast, Dummett has championed an approach modeled on the specification of the contents of logical connectives by introduction and elimination rules. Extending that idea to yield a more generally applicable notion of circumstances and consequences of appropriate application, he seeks to understand the contents of non-logical concepts in terms of the inferential commitments they implicitly contain relating those circumstances and consequences. There are also theories that attempt to combine more even-handedly the elements best epitomized in observational and

logical concepts, without really adding to the explanatory raw materials bequeathed us by the logical empiricists.

But there is something wholly new under the sun. Mark Wilson's *Wandering Significance* represents the intrusion into this tired tradition of a theoretical approach that is both strikingly original and genuinely deep. The evidence, considerations, and ideas he brings into play do not stem from any recognizable prior philosophical school, constellation, or tradition. What he offers is a new conceptual framework that is motivated and supported by concrete, detailed investigations of actual concepts "under a microscope" and "pushed to the limit". Though we have seen before a few examples of the sort of careful, patient case-study of the use and development of actual concepts that Wilson presents (Lakatos' discussion of the development of the concept polygon is a familiar one), Wilson offers us dozens of them, each showcasing different phenomena, but illuminating each other and collectively both supporting and illustrating the metaconceptual theoretical apparatus he develops on the basis of those examples.

One could (as he acknowledges) think of his inspiration as in a very broad sense Wittgensteinean. But the aptness of that thought is not a consequence of his presenting an interpretation, or even being inspired by a reading, of Wittgenstein's texts. On the side of doctrine, he certainly does accept the principle that we should look to the actual *use* of empirical concepts, rather than starting with a preconceived notion of what their *meaning* must consist in. More broadly, he is a staunch practitioner of Wittgenstein's methodological advice: "Don't think, look,"—not that he doesn't think, but that his thinking is always informed by and answerable to what he finds when he looks at the actual use of particular representative concepts. Where most philosophers addressing this topic have proceeded in a top-down direction, driven by issues and convictions concerning matters of high philosophical theory, Wilson's approach is relentlessly data-driven, bottom-up, motivated by an impressive variety of careful, detailed, convincingly described case-studies, almost none of which have previously received any attention from philosophers (or, for that matter, historians of science, psychologists or other cognitive scientists). The case studies alone are worth the price of admission (which for a book of this size is, it must be admitted, not a small one), providing a fund of examples and phenomena that will henceforth have to be taken into account by any subsequent semantic discussions that aspire at least eventually to make contact with the actual practices of using empirical concepts—even by those who part company with Wilson in the more theoretical conclusions he goes on to draw from them.

Philosophical theories of concepts take their place in a broader theoretical semantic framework of sense and reference. Contrary to

Frege's own usage, they typically aim to articulate something on the *sense* side of that divide. Since the '70s, we have learned to distinguish two roles played by the Fregean notion of sense: that of determining the reference of an expression and that of being what is grasped when one understands an expression. Theories of concepts divide again, depending on which aspect they take to be primary, the *semantic* or the *epistemic* (as the distinction is often characterized, in the absence of a crisp adjective that means "of or pertaining to understanding"). On the side that treats meaning and understanding as co-ordinate concepts (as, for instance, Dummett does), one can then broadly be more cartesian (endorsing what Millikan disapprovingly calls "meaning rationalism") or more pragmatist (understanding semantic understanding as consisting in some kind of "knowing how") or more functionalist. But whatever approach one takes in that arena, the corresponding semantic task of determining reference is still understood on a model that belongs in the box Wilson labels "classical gluing", paradigmatically (for him) of predicate to property. To vary the image, it is as though the referent (whether property, relation, or object) were a fish, and the sense must supply the bait and hook required to attract and hold it firmly. Though this picture has done yeoman service for us over the past century—during which it has been very close to the only straw floating—Wilson marshals a massive amount of evidence showing that it breaks down when we press it even a little by confronting it with the actual behavior of concepts at ground-level, where the rubber meets the road (literally: it was, he tells us, the need to extend the application of classical mechanics to such substances as rubber, plastic, and toothpaste that led to a conceptual *lift* of classical mechanics that serve as one of his paradigms). He proposes a semantic-epistemic framework that is radically different from, and significantly more flexible and nuanced than, the venerable but by now evidently geriatric structure of sense and reference that has guided our inquiries until now. (In Section IV, I'll suggest that what he is offering is, in his own terms, a *semantic lift* of the concept 'concept'.)

Although Wilson does not organize things this way, I am going to introduce his ideas about concepts under three headings: statics, kinematics, and dynamics. The first comprises the different sorts of *structure* that he finds concepts exhibiting. The second includes the various *processes* that confer those structures. And the third addresses the *forces* that drive those processes.

II. Statics: Structure

Concepts the tradition thought of as 'complex' have internal structure in virtue of the way they can be defined, constructed, or otherwise

introduced in terms of other concepts. But even those the tradition thought of as 'simple'—concepts such as weight, hardness, and red—can exhibit internal structure if their range of applicability divides functionally into different regions. Before Wilson, we tried to handle such phenomena in the vicinity as were visible to us principally by appealing to three metaconcepts: ambiguity, vagueness, and context-dependence. Wilson shows us just how much of the fine-structure articulating our empirical concepts we are condemned to overlook if we limit ourselves to such an impoverished metaconceptual armamentarium. As a simple example, consider weight. We all learned in high school that some of the phenomena we group together under this heading really belong in a bundle better labeled 'mass', while others belong in a bundle better labeled 'impressed gravitational force'. We can be sure that these are different, since the former does not vary with distance from the Earth, while the latter does. But neither of these notions underwrites our desire to say that astronauts in orbit or the inhabitants of a free-falling elevator are weightless. There seem to be different frameworks for judging and comparing weights—frameworks that are mutually incompatible, but each consistent and useful within its own domain. So is the term 'weight' just ambiguous? Well, not *just* ambiguous, in the way, say, 'bank' is. For first of all, there are inferences in common between any two of these three affiliated conceptions, and so structure to the relations between them. These are not just three distinct concepts that have been arbitrarily assigned to the same word. As a way to begin thinking about the additional structure present here, Wilson suggests we think about concepts like this on the model of an *atlas*. Different *leaves* or *sheets* of the atlas may present the same terrain—say, the surface of the Earth—according to different mapping conventions. One uses the Mercator projection, best for navigating with compass and sextant. Another uses the Hammer projection, which facilitates judgments of relative area. Another uses the Goode projection, which makes it possible to compare shapes. And so on. Mass, impressed gravitational force, and work required to move something relative to a local frame are (some of the) leaves of the atlas-structured empirical concept weight.

Further, Wilson shows us that this sort of atlas structure is just the simplest of a whole host of more complex ways in which what are in some generic sense different sub-concepts of a concept can be related to one another. These rich sorts of further structure are pushed out of view if we content ourselves with gesturing at them by waving an undifferentiated notion of 'ambiguity'. Another common, slightly more complex, structure some concepts exhibit is one in which the different sheets of an atlas are arranged as a *patchwork*. Consider the concept

hard. Hardness generically is something like resistance to penetration. To test such resistance, we might press a weight on a sample, squeeze it, strike it, scratch, cut, or rub it. The results of these various tests will not always be consilient. And for a whole host of reasons—ranging from matters of fundamental physics to the practical interests that motivate concern with hardness in the first place—different measures are more appropriate for different classes of materials: squeezing or impressing for plastics and rubbers, scratching and cutting for ceramics, striking and rubbing for metals, and so on. Here the main difference from a simple atlas structure, in which the sheets are bound together by family resemblances (here practical or inferential properties shared by some, but not all, of the sheets), is that the various sheets in a patchwork of zones of practical control are connected to each other at their edges. As we move out from the center of the patch where impact tests of hardness are most appropriate, by considering more and more brittle materials, we eventually get to a region of the phase space in which scratch tests work better. If we move instead in a different direction, to more and more malleable materials, compression tests come to make better sense. There is nothing corresponding to this connection of sheets, permitting movement from one to another, no notion of distance from the center of a patch, in the case of cartographic projections or the different components of weight—never mind in cases of mere ambiguity.

Within a patchwork concept, there are various structures that the connections between the edges of the patches can exhibit. The hardness patchwork displays path-dependence because its patches overlap. That is, one's assessment of how hard some particular sample with intermediate properties is can vary, depending on whether one assesses it by moving out from the methods and standards centering on the hardness of brittle substances or from those centering on malleable ones. Because of the proper applicability of multiple methods and standards, there need be no straightforward fact of the matter as to which of two samples is harder than the other.

A different structure that patchwork concepts can exhibit has the patches describing different regions of applicability joined by *boundary layers*. A paradigm of this common structure is Prandtl's description of the laminar flow of an incompressible fluid in terms of a stationary layer near pipe walls or wing surfaces, marked off from a freely-flowing region by a boundary layer whose behavior does not satisfy the equations appropriate to either of the two regions it separates and connects. A more accurate, but less wieldy concept displaying the same boundary-layer structure can then be constructed by a *lift* that replaces the two-patch concept by a three-patch one, in which flow near the

boundary is described, though behavior at the boundaries between it and the laminar flows is not.

Besides overlapping and boundary-layered patchworks, there are also concepts whose inner structure involves smooth variation of the sort we find within patches, as inferential, observational, and interventional techniques are sequentially extended from a central, well-behaved paradigm, but where the resulting sheet then comes to overlap itself. This happens when the concept square root is extended to the complex plane. The image offered for Riemann's solution is a ramped *parking garage*—with two levels repeating seamlessly in the case of square root, and infinitely many levels doing so in the case of natural logarithm.[1] The value of the function for a particular argument, the measurement that results from applying the concept in particular circumstances, depends on which level one is on hence on the particular path of *analytic prolongation* that has led one from the center (entrance) to that point in the region of applicability of the concept. And Wilson also has examples, for instance, the "Stokes phenomenon," of concepts that combine smooth, continuous analytic prolongation with boundary-layered patches. Other structures in the vicinity include "boundary joins," "bridges," "crossover boundaries," and more.

A short review such as this cannot survey, but only gesture at the rich variety of conceptual structures Wilson considers. And without his patient, detailed examples and case-studies it is impossible fully to appreciate any one of them. Nonetheless, I hope I have said enough here to make it clear that in the light of Wilson's work, the notions of ambiguity (which corresponds to an atlas of unrelated flat sheets), *sorites* vagueness, and context-dependence must now be considered hopelessly crude metaconceptual tools for describing the fine structure of actual working empirical concepts. (In this context, one will find thinking about how much effort it has taken to get even reasonably clear about the nature and significance of the comparatively simple *sorites* structure either exhilarating, because of the open-ended tasks ahead, or dispiriting, for the same reason, depending on one's philosophical energy-level.) One of Wilson's avowed tasks is to:

> …extol the virtues of façades as triumphs of efficient linguistic engineering, for fracturing a descriptive task into patches monitored

[1] If this seems hard to imagine, there are good reasons. As Wilson points out "the topology of a Riemann surface cannot be realized as an ordinary spatial shape within three dimensions." [p. 317]

> along their boundaries creates a platform whereupon reduced variable strategies can exploit localized opportunities very effectively. [203]

The last part of this remark telegraphically indicates what lies behind patchwork structures.

III. Kinematics and Dynamics: Processes and Forces

Had Wilson only opened our eyes to these new sorts of conceptual fine structure exhibited by logically simple concepts such as weight, hardness, and red, he would have done a lot. But he does much more than that. For he is equally interested in and insightful about the processes that produce and sustain those structures. And here again his originality is manifest, as he introduces a host of novel metatheoretic concepts for discussing the sort of extended practical negotiation that takes place between the demands of how it is with the things and properties we are talking about and the empirical and interventional capacities, instruments, and interests that we bring to bear on them. When things work well, when the concepts we deploy succeed in making the phenomena they address tractable, the result is the fabrication of a conceptual *platform*: a kind of workbench-with-tools that is the context in which things become available to us to observe, work on, manipulate, reason about, and investigate theoretically. Wilson emphasizes the extent to which various important features of the processes involved in platform-building are not epistemically transparent to us, taking place outside our field of explicit awareness and intention. They happen in large part behind our backs, while, driven by an oversimplified correlational picture, we are trying and intending to perform what he calls a ''classical gluing'' of predicate to property, aiming to produce a flat, single-leaf façade framework. We fail, without realizing it, to do *that*, but nonetheless can succeed at instituting a workable patchwork (say) that gives us a genuine, more or less reliable, cognitive and practical grip on how things really are.

The varieties of patchwork structure serve to warn us against what Wilson calls ''tropospheric complacency'':

> the distortions that arise when we too quickly presume that the behaviors of the world's collection of objective attributes carry us from one setting to another in an uncomplicated manner [84].

There is a temporal version of this mistake as well. Wilson thinks that the classical sense/reference picture encourages us in our attachment to an unrealistic expectation of semantic fixity: ''the notion that the contents of our concepts stay largely invariant over time'' [85].

But the practical accommodation—the "*interfacial compromise* between the physical attributes of the systems under investigation and inferential capacities available to us" [400]—that platforms embody develops and evolves. New patches or patch-centers are added, old ones are analytically extended or subdivided, boundary-layers get lifted into further patches with different boundaries or potential for prolongation, and so on. Wilson presents a number of compelling examples of *property dragging*: cases where the range of proper application and the inferential consequences of application of some predicate drifts over time, pulled now one way, now another by features of the actual properties of the system of which the users of the predicate are at most only vaguely aware. This is the "wandering significance" of the book's title. In place of the classical picture of a sense determining a reference, a conceptual content stably "gluing" a predicate to a property, Wilson offers

> not an account of an alternative adhesive, but simply a more detailed accounting of the machinery of cooperation (and lack of it) between Nature and man that often leads descriptive language along the improving, but often mysterious, developmental paths we frequently witness. [235-6]

Like the complex internal structures conceptual platforms acquire by being caught up in developmental processes with this character (simple atlases, overlapping or boundary-layered patchworks, Riemann parking garages, Stokes façades…), property dragging ought not, Wilson argues, to be thought of as a shortcoming or blemish that one might hope a more perspicuous or detailed account or idiom could eliminate, nor as a merely epistemic difficulty resulting from imperfections of our understanding. It is rather an essential aspect of the procedures that make it possible for us to do as good a job as we simple-minded folks do in describing a messy, complicated world. One force that drives the process of nucleation, subdivision, prolongation and analytic extension of patches, formation and dissolution-by-lifting of boundary-layers between patches and so on that shape the polycrystalline, semantically multivalued platforms and façade-frameworks Wilson describes is the need for *physics avoidance* by *variable reduction*. Our ordinary and technical empirical descriptive predicates must be applied by macroscopic creatures in a quantum world.

> Classical doctrine looks like a suit of armor welded together from a diverse set of stiff plates. Considered solely in its own terms, its organizational rationale will seem elusive, but regarded as outer fitting suitable for a quantum mechanical knight, the entire affair makes

> complete strategic sense as an efficient asymptotic covering…It's descriptive successes…are effective precisely because their sundry routines of physics avoidance neatly cover the quantum realm like an excellently tailored fabrication of buckler, breastplate, and shinguard. [197]

Deploying tractable descriptions of an indefinitely complex world requires such cognitive strategies as sweeping complicated behaviors into minimally described singularities and boundary layers, beginning with idealized patch-centers that ignore such complications as friction, shock waves, and contamination of materials, restricting attention initially to a relatively narrow range of application (for instance, to temperatures, pressures, velocities, and forces close to the ordinary range of human experience), and then tolerating diverse forms of patch-to-patch prolongation. So, for instance:

> Appeals to rigid body represent the imposition of top-down schemes for reducing descriptive variables (that is, we utilize the fact that certain aspects of a complicated system's macroscopic behavior are already known to us to simplify how we reason about the aspects we don't yet know). [373]

These strategic cognitive necessities are broadly practical, but Wilson argues that they are not in principle avoidable. The concrete result is that a predicate such as 'weight' is dragged away from its original home patch when we begin to worry about applying it far from the Earth's surface, as 'solid' is when we realize that lifting the concept of rigidity by means of "for details see…" links to explain the detailed behavior of actual materials under compression and tension requires treating some regions of them as acting like fluids. The philosophical result of acknowledging these evolutionary developmental forces that come to bear on our descriptive and explanatory concepts when we apply them in actual cases is the requirement of a much more sophisticated and articulated semantic account than is provided by either the classical semantic gluing-by-baptism of 'dog' to *dog*, or by more holistic role-in-a-theory alternatives.

Wilson's nuanced alternative is a semantic dynamics that centers on *distributed normativity*. In place of one-size-fits-all overarching philosophical semantic pictures, his examples show the advantage of being sensitive in each particular case to the whole variety of *evaluative directivities* that shape the development of our conceptual platforms, tugging in different directions—making now one, now another sort of patch creation, prolongation, linking, or nucleation feasible, salient, or attractive. When empirical descriptive predicates must be applied in

new circumstances, the old use extended in some new direction, the process is guided by "different directivities of appropriate continuation" [445].

> …the reasoning and measuring techniques we employ generally embody "intrinsically unsuitable personalities" (the stiffness of an analytic function is our prototype) whose effects are mollified by skillful recombination and monitoring. More generally, any viable predicate 'P' must be surrounded by a shifting cloud of easy-to-follow directivities… [446]

The most effective of these directivities are "standards of fairly trustworthy measurement and evaluation," which we seek to extend to the novel cases. But the typically implicit norms ("strands of practical advantage") brought to bear on the process can, as Wilson's myriad examples show, be quite diverse: practical, observational, and manipulative techniques, inferential connections one seeks to preserve, idealizations, models and analogies, algorithms, even syntax.

What Wilson calls the "classical" view of predicate use takes it that each predicate has been somehow semantically "glued" to a property, that competent users "grasp" that semantic connection, and that that correlation already determines once and for all and in advance ("semantic finality") how it would be correct to apply the term in all circumstances. (A recurrent lesson in the book is how difficult it is to rid ourselves of various habits of thought induced by this picture, even when we firmly and explicitly reject each of its component commitments.) By contrast, Wilson takes it that it is often an open empirical question which directivities should dominate at a given stage in the development-by-extension of a predicate. Practical evaluative directivities of conceptual development exhibit a *seasonality*, waxing and waning in relative significance in response to a daunting variety of collateral circumstances, some having to do more with how the world we are applying the concepts to actually is, and others having to do more with the current state of development of our observational, inferential, and interventional tools. The craft wisdom practitioners exercise in the form of differential sensitivity to various normative directivities is not infallible. Often it results in two steps forward and one step back, exploring a new path after retracing one's steps. The classical picture of conceptual content, meaning, or sense is the product of our rational reconstruction of this process, retrospectively smoothing it out, discarding what now appear as mis-steps, constructing a mythical pre-existent commitment in the form of a correlation that is then presented as having presided all along, providing the dominant directivity

determining what should be counted as a *correct* application of the concept in new cases.[2]

Wilson calls the view that he develops in opposition to the classical one "pre-pragmatism." In a characteristic passage, he describes the opposition like this:

> The classical picture claims that concepts cover every inch of advance territory in the manner of a scrupulous surveying team, whereas pre-pragmatists anticipate that our predicates behave like the agents that the CIA frequently recruits: layabouts who fritter away their hours in neighborhood bars and then file hastily improvised 'reports' when pressed by the home office. [233]

The 'pragmatism' in his "pre-pragmatism" is recognizably shared by Wittgenstein and Dewey—but it is not that emphasized by contemporary neo-pragmatists like Rorty. Wittgenstein, too, thinks that an absolutely fundamental discursive phenomenon is the way in which the abilities required to deploy one vocabulary can be practically *extended*, elaborated, or developed so as to constitute the ability to deploy some further vocabulary, or to deploy the old vocabulary in quite different ways. Many of his thought-experiments concern this sort of process of *pragmatic projection* of one practice into another. We are asked to imagine a community that uses proper names only for people, but then extends the practice to include rivers. There is no guarantee that interlocutors can master the extended practice, building on what they can already do. But if they can, then they will have changed the only 'essence' proper-name usage could be taken to have had.[3] In the old practice it always made sense to ask for the identity of the *mother* and *father* of the named item; in the new practice, that question is often senseless. Again, we are asked to imagine a community that talked about having gold or silver in one's teeth, and extends that practice to

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[2] What Wilson calls the "classical framework" of philosophical thought about concepts, as it appears in the body of his text, is a somewhat amorphous opponent. It is mostly clear that it is blind to the phenomena he highlights concerning all three of the levels I distinguish: statics, kinematics, and dynamics. He rectifies this situation considerably in a very helpful appendix to Chapter 3, which epitomizes the classical framework in 44 theses. (Like Marx in his eleventh thesis on Feuerbach, Wilson thinks that philosophers have so far been interested in understanding how we understand concepts, when the point is to change our understanding of how we change them.) These seven pages could serve as an admirable outline for a graduate seminar. Sorting out who endorses various versions of which, and the different ways in which they have been taken to be related would take a book in itself. In spite of his cautious caveats, I think Wilson's "classical framework" is presented as too monolithic to bear more weight than as a rhetorical foil for his own views.

[3] Cf. Quine's remark (in "Two Dogmas of Empiricism"): "Meaning is what essence becomes when it is detached from the thing and attached to the word."

talk about having pain in one's teeth. If as a matter of contingent fact the practitioners can learn to use the expression 'in' in the new way, building on but adapting the old, they will have fundamentally changed the ^{s}meaning^{s} of 'in'. In the old practice it made sense to ask where the gold was *before* it was in one's tooth; in the new practice asking where the pain was before it was in the tooth can lead only to a distinctively *philosophical* kind of puzzlement.[4] Wilson's examples are not made-up thought experiments concerning toy practices or Sprachspiele. They are detailed case studies of the actual development of important empirical concepts that aim to sort out the evaluative directivities that shaped their trajectories, and to botanize and explain the processes (lifting, analytic prolongation, variable reduction) and the conceptual structures (patchworks with boundary layers or overlaps, parking garages, and so on) that result.

The emphasis on the dynamic character of concept use, on understanding "the practical go" of discursive activity, on the seasonality, variety, and distributed normativity of the indefinite cluster of evaluative directivities whose collective vector resultant is what 'guides' the extension of previous practice in each new foray into uncharted territory, the insistence that the nature of and relative influence exerted by these directivities, as well as the structures that result from its exercise are largely opaque to the ones using the concepts and engaging in the projection or extension of the practice, so that success (limited, local, and provisional) in the enterprise is a matter of implicit practical know-how rather than deriving from grasp of explicit principles or theories—all of these themes are equally essential to the contrast Dewey draws between his pragmatist account of concept use and classical intellectualist ones. Wilson's work is the most important development to date of this Deweyan tradition. The influence of Dewey's insights was substantially diminished by his inability to provide what Wilson gives us in abundance: rigorous, detailed, concrete applications of those insights to illuminate the actual use and development of important empirical descriptive concepts, both observational and theoretical. This is one of the very few philosophical books of which one could be confident that both Peirce and Dewey would have loved it. Wilson is ushering in a new, more mature phase of American pragmatism.

Why then "*pre*-pragmatism," as the preferred term for Wilson's approach? There seem to be a number of reasons why he wants to distinguish himself from full-blown pragmatists—from Wittgenstein

[4] I am indebted for this way of thinking of Wittgenstein's point to Hans Julius Schneider's penetrating discussion in his *Phantasie und Kalkul: Über die Polarität von Handlung und Struktur in der Sprache* [Suhrkamp, 1992].

and Dewey, Rorty, and even Quine. All these figures join Wilson in rejecting classical semantic gluing, the classical grasp picture of conceptual content as epistemically transparent, the idea that there is a content that reaches out ahead of actual use to determine the correctness of all possible future uses, and commitment to semantic finality, that is, of the stability and once-and-for-all fixity of boundaries of concepts. But they do so in no small part because they reject the semantic *atomism* of the classical picture in which an act of semantic will (perhaps given public expression in the form of a baptism) establishes the correlation between predicate and property—gluing the one onto the other in the 'dog'/dog fashion—which then is both what is grasped and what stably determines the correctness of future applications. But what they recommend instead, as Wilson diagnoses them, is what he calls the "theory T syndrome." This is the view that the content of a concept should be understood as determined by the inferential role it plays in a theory or set of claims or principles. The result is an objectionable "*hazy holism*." Conceptual contents are seen to develop, as the theories that implicitly define them change. Since we can't anticipate how the theories will change over the course of the experience of applying them, we can't anticipate how the concepts embedded in them will develop. And our grasp of each individual concept will be proportioned to our mastery of the whole theory of which they are a part, and of their contribution to it. But, Wilson claims, this is just to substitute one sort of semantic 'glue' for another. The holist picture doesn't give us the metatheoretical apparatus to express and explain the details of the structures, processes, and forces involved in the application and development of concepts any more than its atomistic predecessor did. The holism to which the pragmatists recoil is "hazy" in that it underwrites theoretical quietism and semantic nihilism. Terms such as 'use,' 'practice,' and 'role' are deployed as incantations that have the practical effect of closing off the possibility of systematic study of the actual distributed normative directivities in play in particular episodes of conceptual development, and of the details of the conceptual structures that result.

> All those holist critics who have reacted to the failure of logical empiricism by insisting that 'science represents an institutional practice, not formalized theory' direct our attention away from the very issues to which we must attend, if we hope to understand how *ur*-philosophical puzzles arise, both in science and elsewhere. Such thinkers encourage the impression that the path to understanding mystifying policies in science is not to be reached through formal study. No advice could be further from the truth…The language twisting strategies I emphasize are commonly subtle and well-camouflaged. [200]

Wilson thinks of himself as a *pre*-pragmatist because he is motivated by many of the same insights that motivate the pragmatists, but refuses to take the step to hazy holism and the anti-systematic invocation of 'practice' he sees as characteristic of the full-blown pragmatism he takes still to be in thrall to the classical picture—albeit reactively. Insofar as it seeks to correct an overreaction by diagnosing pragmatism as insufficiently radical in its repudiation of the classical picture, the view on offer could with equal justice be called "post-pragmatist."

IV. Scope: Specialized Subfield or General Metatheory?

I have heard Mark Wilson describe himself as "an ordinary-language philosopher—whose ordinary language is classical physics." That characterization is fully borne out by his book. Some of the concepts he considers are quite ordinary: red, hard, and rainbow. But most are concepts of classical physics, engineering, and pure and applied mathematics. And even the everyday concepts he considers are treated from the point of view of those disciplines. This observation raises what seems to me the most serious methodological question about Wilson's enterprise. In his subtitle, he calls his book "an essay on conceptual behavior." By opposing his pre- or post-pragmatism to classical approaches to concepts, both in their atomist-empiricist and holist-pragmatist forms, he puts it forward as teaching us *general* lessons about the structure, use, and development of concepts—as introducing a metatheory for describing and explaining features of discursive practice in general. But given the somewhat specialized character of his (numerous) examples, and how unusual they are relative to the previous philosophy of language and mind literature, perhaps instead we should see Wilson as pioneering a new subdiscipline or cluster of subfields: philosophy of engineering, or foundations of applied mathematics and physics.

One of the reasons that no other carbon-based life-form could have written *Wandering Significance* is that Wilson's thorough research has required him to read hundreds of books that philosophers *never* look at (though engineers sometimes do): books on rheology, durometry, cartography, metallurgy, fluid mechanics, non-smooth thermodynamics, shock compression, caustics, wavelets, color technology, the kinematics of machinery, and many, many other such topics.[5] (One result is a treasure-trove of examples for those of us philosophers who will never follow his example, but now can make use of the results of his labors.) Recent philosophy of science has moved away from general epistemological and semantic issues (demarcation, explanation,

[5] One of the great charms of the book is that his range of *literary* reference is similarly wide, idiosyncratic, and carefully and tellingly deployed.

confirmation…) in the direction of much more detailed work in such areas as philosophy of physics and biology. Wilson shares with those pursuing such enterprises his professional-level mastery of current scientific work in the ground-level fields he addresses, but in place of the highly theoretical reaches of physics and biology, he puts engineering in a broad sense: *applied* mathematics and physics. The narrowest reading of the significance of Wilson's book—the deflationary hermeneutic null hypothesis against which it must be tested—is that the phenomena he points to are specific to concepts as used in engineering. If the conceptual structures he describes were for instance tied very tightly to using continuous analytic functions such as partial differential equations to describe a quantum microworld, then there would be no particular reason to think that the use of empirical concepts *generally*, as deployed outside of the quite specific context of applied, quantitative, special physical sciences, will be illuminated by the thinking about the fascinating things that happen in those rarified confines. We should applaud the inauguration of a new kind of philosophy of physics—one that deserves to be laid alongside foundational work in fundamental theoretical physics—which is the least that Wilson has accomplished. But according to this possible way of thinking, we need expect no greater impact on semantics and the philosophy of language than is to be anticipated to emerge from those quarters.

At the opposite extreme, what would make Wilson's work have the greatest philosophical significance is if the structures, processes, and forces he identifies in the case of the specialized concepts he considers will show up as characterizing the use of *any* empirical concept, *if we just look at it hard enough*. On this line, the fact that Wilson's best and most compelling case studies are drawn from the mathematized special physical sciences is neither just a reflection of the author's idiosyncratic predilections and training, nor a substantive restriction on the generality of his results. It arises from the fact that these are the concepts whose use has been most intensively studied—so that it is possible to read the many fat books on the definition and various ways of measuring hardness that Wilson has read, for instance, since there is a sub-sub-field of engineering devoted precisely to the care and feeding of that concept. What Wilson is doing is putting the use of some concepts under a microscope. We just don't know enough about the actual development of the use of most concepts, are not in a position to make sufficiently fine-grained assessments of the relative success of various attempts to extend them to new domains, and hence to discern the specific "distributed normative directivities" to which they are subject, and the structures of the concepts that as a result have turned out to give us pretty good descriptive purchase on the world, to do that for other

sorts of concepts. The virtue of focusing on these technical concepts is that these are the ones we are actually in a position to put under the right sort of microscope.

An intermediate alternative is that the metaconcepts Wilson introduces will apply to the use of any ordinary empirical descriptive concept *if we push it hard enough*. By "pushing it hard enough" I mean looking to unusual applications, at the fringes or boundaries of more central ones, trying to make much more precise and detailed (paradigmatically, but not exclusively, quantitative) inferences from its applicability, and seeking to formulate rules, principles, equations, or formulae for when it is to be applied on the basis of others, of the results of various sorts of measurements, and so on. A paradigm of this sort of demanding exploitation of a concept occurs when we impose new measure-theoretic demands on the presence of what is for the first time construed as a *quantity* of some sort, and then try to construct machines to measure it in a way that will satisfy those demands. According to this way of understanding things, what Wilson is teaching us about is what happens when concepts are relentlessly pushed beyond their present carrying capacity—demanding more precision and control of their behavior than they currently admit. Where on the previous alternative Wilsonian phenomena are understood as being latent in the use of any and all empirical concepts in the sense that they are always already there, if we but have eyes to see them, according to this one they are latent in the use of any and all empirical concepts in the sense that any such concept could and would come to exhibit them, if it were subjected to the same sort of grueling training regimen the ones he actually considers have undergone.

How are we to adjudicate between these alternatives? The first thing to realize, I think, is that this is in no small part a question about how to think about the concept concept. I began my remarks by pointing out that contemporary philosophical theories of concepts are broadly Carnapian, taking their cue from his discrimination of two dimensions of conceptual content by taking as the paradigms observational and logical concepts. Wilson's extended complaints about the "theory T syndrome" suggest we ought to acknowledge a third influential paradigm: theoretical concepts, construed as implicitly defined by their inferential connections to other theoretical concepts.[6] In terms of Wilson's metaconceptual apparatus, we can think of these different approaches to concepts as centering on different patches in the

[6] Wilson assimilates this to the inferential paradigm that Dummett generalized from the case of logical concepts, assimilates that to the "theory T syndrome," and understands both in terms of focus on *syntax*. In my view, each of these assimilations is tendentious.

platform associated with the 'concept' predicate. Each proposes to cover more distant regions by some sort of prolongation of the various practical-inferential techniques that have proved successful in its home territory. Put in Wilson's terms, the first, deflationary interpretation of the significance of his work sees it as recommending that we focus to begin with on the patch that comprises mature concepts of applied mathematics and physics. We should then look at what sorts of boundaries, transition regions, overlaps, bridges, lifts, and so on relate that patch to other sorts of concepts.

Again applying Wilson's own apparatus to the question at hand, we could see him as not merely describing the structure of our current concept of concepts, but as proposing a development of it: roughly, from the picture of classical gluing, grasp, antecedent definiteness, and semantic finality to his pre- or post-pragmatist picture. His overall argument for this development consists in a persuasive inventory of various evaluative directivities that can already be seen to be in play in our talk about concepts, directivities that become visible when we put under an analytic microscope concepts that have been pushed hard and examined closely by professionals charged with overseeing their use in circumstances that involve many iterations of a feedback cycle of application to new cases, inference, intervention, and assessment of the theoretical and practical effects of those interventions. Another set of concepts whose use has this character can be found in the realm of jurisprudence. Here, too, concepts such as contract, property, and strict tort liability have been studied, expounded, criticized, and extended by institutionally supported professional communities. The course of development of these (and many other much more specific) legal concepts is also public, accessible, and subjected to microscopic investigation by generations of judges and law professors. Though I do not have even the second-hand expertise concerning these concepts that Wilson exercises for those whose histories-cum-contents he retails, I think it is very likely that the metaconceptual apparatus of *Wandering Significance* will be found to be applicable, helpful, and in fact deeply illuminating in describing what goes on with the use of these ground-level concepts as well. If that turns out to be true, it will be the best possible evidence that his conclusions ought not to be understood as limited in their scope to the parochial precincts of engineering.

But in fact the metatheoretical semantic/pragmatic idiom that Wilson develops in order to discuss the vagaries and vicissitudes of the development-by-application of technical concepts of physics and mathematics is extremely helpful in thinking about the philosophical concept of concepts, and (what before the advent of his more sophisticated vocabulary we were obliged to think of in cruder traditional terms as)

relations between their contents and their use. One cardinal measure of the more general philosophical illumination Wilson's work provides is the extent to which he has succeeded in putting meat on the bones left behind by the later Wittgenstein. Wittgenstein's broadly pragmatist criticisms of many of the same views that Wilson identifies as elements of the classical picture of philosophical semantics have often been thought to preclude serious analytic philosophical semantic work. (Indeed, that shared conditional thought underlies a substantial sociological divide in contemporary Anglophone philosophy of language and mind, a split separating those who prefer to exploit it by *modus ponens* from those who instead apply *modus tollens*.) But Wilson shows how it is possible to take Wittgenstein's lessons on board, and yet to move beyond a merely critical, theoretically quietistic response to them. He does that precisely by going "back to the rough ground" constituted by the messy contingencies that shape the actual developmental trajectories of empirical concepts. But he shows us that even such rough ground can be surveyed systematically, and he provides a powerful and adaptable set of metaconceptual instruments for doing so. It is no accident, but just what a sufficiently broadminded Wittgensteinean particularist should expect, that he does so by shifting attention from the ideal realm of toy Sprachspiele and Gedankenexperimenten to the trials and tribulations of actual, grown-up, hardworking, highly trained professional concepts.

V. Conclusion

Let me close by mentioning a fascinating issue that Wilson's discussion seems to me implicitly to raise, but not explicitly to pursue. The framework in which Wilson embeds the phenomena he considers is relentlessly realistic. He suggests, for instance, that the need for the sort of "variable reduction" characteristic of the processes that produce the structures he points to is the inevitable result of our need to apply macro-predicates in a world with an underlying quantum microstructure. He works throughout with a picture according to which dynamic pragmatic "platforms" are erected, maintained, and developed as the result of ongoing processes of negotiation between contingent subjective factors such as the particular character of our measuring instruments, practical interests, the materials we happen to be working with, and so on, on the one hand, and how the world in itself objectively is, on the other. There are tantalizing hints, however, of a certain tension between the points of view of the bluff realism with which Wilson begins and the evolved pre- or post-pragmatism that he ends by espousing. The question is whether acknowledging the semantic and

epistemological ubiquity and unavoidability of conceptual platforms ought not to loosen our confidence in our grip on the notion of the one way the world objectively is—or at least demand a more or less radical transformation of our understanding of that idea. Particularly suggestive in this regard is Wilson's fascinating discussion of "billiard-ball physics", where he argues that the sequence of "lifts"—changes of setting in which idealizations are removed and approximations replaced, for instance moving from ordinary to partial differential equations or looking in detail at what happens at boundary layers, when shock waves (with their attendant high pressures and temperatures) are considered—may have no final stage, but rather circle back on itself in the physicist's version of the "lousy encyclopedia" phenomenon. If even some of our best understood classical physics is like this, I am not sure I understand Wilson's confidence that a firm (classical in his sense?) footing could eventually be found in quantum mechanics. What sorts of changes will need to be made in traditional realistic thinking about properties once we have fully digested Wilson's lessons about the use of predicates? What are we really envisaging when we talk about such properties, if the only way we can grasp them (grasp what?) is by deploying predicates that exhibit the behaviors retailed in Wilson's book? These issues are part of the background of Wilson's work in this book, not topics he addresses directly. But I think pursuing them may be one of the more productive endeavors it engenders.

Henry James, addressing the massive Victorian triple-decker novels of a previous generation, famously complained about the difficulty even the most conscientious reader faces in trying to pull together into a single vision what was supposed to be conveyed artistically by what he called "such large loose baggy monsters, with their queer elements of the accidental and the arbitrary."[7] But he also acknowledges that the best of them in the end oblige us to admit that "there had surely been nevertheless a mighty pictorial fusion, so that the virtue of composition had somehow thereby come all mysteriously to its own." Both the difficulty and the triumph he invokes are extravagantly on offer in Wilson's magnificent, magisterial, unprecedented work (also not without its quirks, indulgences, and trials to the patience of its readers). Its radical, deep, and original considerations and conclusions will both take us a long time to digest and, when we have done so, be seen to have moved us a considerable distance forward out of the theoretical doldrums in which we can now clearly see that we have for some time languished.

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[7] In his preface to *The Tragic Muse* (1907).