# Introduction

"Phenomenological reductionism" is a play on words which aims to connect phenomenological philosophy, including the phenomenological "reduction", with reduction*ism* as a program and paradigm in science and in the philosophy of science. In this dissertation, I will take a phenomenological look at one of the key perspectival debates in contemporary intellectual life: the conflict of perspectives between *reduction* and *emerge* as paradigms for scientific explanation. This is a debate between perspectives, not a raging conflict between incompatible theories, so the debate itself can be rather subtle. It is deep-seated, however, because it cuts across disciplines and connects problems in natural science, philosophy, cognitive science, linguistics, and sociological disciplines (sociology proper, anthropology, cultural studies, etc.). Phenomenology and the philosophy of mind are also key players on this field.

The reduction/emergence debate has taken root in theories of mind themselves, but my main concern here is how phenomenology can help to frame and negotiate this debate. I think phenomenological considerations can prove influential in considering the debate outside of philosophy itself. Phenomenology has always been concerned with the philosophy of science, and Husserl's main goals, as he started the phenomenological movement, included both defending the scientific project and also analyzing how scientific thought emerges from human cognition in general. As a philosophy of science, phenomenology engages the conditions of possibility for the human mind to conduct formal and world-revealing scientific inquiry. It aims to shed light on the goals, structure, and prospects for science. It is consistent with these aims to develop a phenomenological critique of the current scientific debate between reduction and

emergence, even though this debate postdates the work of Husserl.

In what follows, I will use phenomenology to defend reductionism against more radical kinds of emergence theory or "emergentism". While I do so, please bear in mind that I am not trying to discredit emergentism in general. Theories based on emergence are a necessary complement to reductive science: they explain the phenomena which reduction deliberately passes over. My goal is to critique these theories only when they become self-consciously antireductionist. For philosophy, the issue at stake in the reduction/emergence debate is how to integrate our understanding of natural science with our world-view in general: with our perspectives on the human sciences and the human individual, and with our favored theories of ontology and epistemology. Both reduction and emergence have strengths and weaknesses with respect to their intuitive resonance with these philosophical topics.

First, let me offer a definition of the terms "reduction" and "emergence". Subtle differences in how the terms are defined affect how the debate between them is approached. So the definitions I will give for now are provisional; I will discuss these concepts in greater depth in Chapters 3 (reduction) and 5 (emergence)@. Briefly, though, a *reductive* approach to a phenomenon is committed to the idea that explaining that phenomenon is easiest as, or perhaps is *by definition*, an explanation of the properties and behaviors of its smallest constituent pieces. This assumes, obviously, that a phenomenon under consideration is complex and has simpler constituent parts. These smaller parts may be composed of yet smaller parts. Explanation of complex phenomena proceeds to explain simpler, constituting phenomena, until we arrive at minimal constituents for which there is no explanatory value or meaning in dividing them

further.   Explanation proceeds through different levels of organization.   Any complex

phenomenon has different levels or organization, each of one which can be described on its own

turns.   The most important explanation, however, is the explanation of the "lowest level".

When studying a phenomenon, then, a crucial task is to identify this lowest level of explanation

or "reductive base".

At this point, it is necessary to distinguish reductive *explanation* from reductionism as a

philosophical and scientific point of view.   The distinction concerns how we understand the

hierarchy of levels I just discussed, and, in particular, the reductive base.   By itself, reductive

explanation need not attach ontological significance to the level-hierarchy.   The question at

stake is why the reductive base is used or chosen as the lowest level of explanation.   It may be

so chosen because it yields simple or testable explanations.   It may be so chosen because it is

impractical to seek or to test explanations defined on a lower level.   In these cases, there is no

*ontological* commitment that the chosen reductive base "really" captures the lowest level of

phenomena.   On the other hand, reductionism as a philosophical stance argues that reductive

explanation is incomplete unless it gives compelling reasons to believe that a theory's reductive

base really is the lowest possible level of explanation as a matter of empirical fact.   In other

words, the objects studied by the base theory should in fact be simple and indivisible.   The

hierarchy of levels proposed by the theory should match a hierarchy of composition in the

physical world[1].   Physical sciences, such as physics and chemistry, need (according to

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[1]   Assuming the theory concerns physical things.    If it is a theory in some other domain, there should be parallel

arguments defending the particular hierarchy chosen.    For example, a psychologist explaining human perception

reductionism) to identify the smallest possible units of physical matter and physical reality. This is an empirical matter: the world itself dictates what are the smallest physical phenomena.

For a canonical example of this particular problem, consider the question of whether the smallest units of physical matter[2] are point-particles or, as most physicists now argue, *strings* or "membranes", with spatial extension in one or more dimensions[3]. String theory might be useful as a mathematical tool even if physical particles are, in fact, point-particles (0-dimensional); however, string theorists view themselves as making definitive claims about the nature of matter, rather than simply pursuing useful models. Particles either really are point-particles or really are strings. The success of a theory depends on more than explanatory success or effective model-building.

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should try to discover the minimal units of perception. Experiments can test how brief a stimulus can be and still be noticed. The theory should identify the minimal units of explanation not for convenience, but as a scientific discovery in its own right. For another example, linguistics needs to identify the smallest meaningful units of spoken or written language—letters? Syllables? This is not arbitrary; one can imagine psycholinguistic research that could test the matter empirically. Study of a given phenomenon should identify the smallest possible units which exemplify the phenomenon: the smallest units of language, of perception, of matter, etc. Or, at least, this is an assumption of the reductionism paradigm; as we will see, it is now subject to controversy.

[2] Modern physics does not recognize a fundamental distinction between matter and energy; therefore, when I refer to "matter" I will usually mean "matter and energy". Using the word "matter" for both is more succinct.

[3] For references, cf. p. @ below. For an example of a physicist who still prefers the point-particle paradigm, cf. Robert Laughlin @.

In general, then, a theory has different components, including:

- A collection of entities posited by the theory;

- A set of behaviors, dispositions, and properties evidenced by these entities;

- A model of how collections of these entities act and interact.

For reductionism, there must be a correlation between theory and world on each of these aspects. The entities posited by the theory must map onto and adequately describe entities in the world. It is not enough for there to be theory-to-world fit with respect to models and behavior. Even if physical particles behave as string-theory predicts, and even if string theory can model collections of these particles (such as atomic nuclei), the test of string theory is whether particles "really are" strings. Particles could be wildly different and still evince the same behavior and collective tendencies. Reductive explanation alone could rest on the success of its models and predictions, and remain agnostic as to whether it has discovered the "true nature" of the phenomena in question; but reductionism, as a scientific attitude, aspires to descriptive completeness.

This aspiration has philosophical as well as purely scientific ramifications. The success or failure of natural science affects our metaphysical positions, including whether or not a complete theory of physical nature is necessarily a complete theory of the universe as a whole. Incompleteness in natural science—failure to explain the origin of time and space, for example, or the origins of life and of consciousness—lend credence to the possibility that scientific theory needs to be supplemented by some other mode of investigation, whether it be theological,

psychological, or even rooted in antireductive emergence theory.   I suspect that many scientists, asked to describe the importance of science in human endeavors generally, would respond that science makes it possible to understand the world through the lens of empirical observation and publicly verifiable theories and hypotheses.   Science frees society and governments from religious or speculative ideas which are beyond the reach of public debate and evaluation.   Science evolved toward the reductive ideal on the heels of the modern scientific method.

Reductionism, in effect, is a metaphysical as well as scientific paradigm.   To demonstrate this, consider how it contrasts with emergence theory or emergentism.   Once again, I will not offer a formal definition of emergence at this point, only identify some tendencies[4].   In

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4   References to example of emergent theory can also reflect philosophical differences amongst emergence theorists, which includes different opinions as to how far emergentism differs as a paradigm from reductionism. So we have John Searle, for example, who employs the notion of emergent properties as properties of sets of objects of type *T* which are not realized in individual objects of type *T*; consciousness, for example, is an emergent property of sets of neurons but not individual neurons; but this is no more reason to consider consciousness non-physical than to consider liquidity, and emergent property of physical substances, nonphysical (*Cf*. Searle 1997, p. 18).   Here, the concept of emergence is used to defend the supposition that an emergent phenomenon is *physical*, and so obeys (low-level) physical laws.   The role of emergence here supplements a reductive theory: emergence theory must explain how properties of *T*-objects translate to properties of sets of *T*-objects. Presumably, this translation is governed by *T* laws.   Slightly further removed from reductionism is the work of Stuart Kauffman, who studies the origin of life.   He engages the controversy over whether life, a pattern of complex behaviors, could have emerged from within simpler, pre-living systems (e.g., strings of proteins). Kauffman studies the likelihood of complex patterns of organization actually occurring given the properties of

low-level phenomena which are to be constituents.    This requires analysis of these phenomena (for example, of the kind of protein molecules which are possible), of possible organizational patterns amongst them (between two different proteins, for example), and of empirical considerations such as the length of time available for a system to develop complexity.    Kauffman shows that often complexity is likely to occur—not because of some teleological force in nature guiding phenomena to greater complexity, but by simple probability.    (See Kauffman 1993, Chapter III).    This kind of emergence theory is more developed than Searle's, because it formulates techniques specific to the analysis of high-level patterns, such as computer simulations, and measurements of complexity (*cf*. *op. cit.* 118-130 and 235-243).    This is an theory *of* emergence because it introduces new terms and concepts intended to bridge the explanatory gap between low levels and high levels—a gap which we may not believe is metaphysically real, but still poses explanatory challenges.    Nonetheless, it seems a fair reading of Kauffman's text to suggest that these parts of a theory of high-level emergence supplement, but do not upstage, low-level theory; in particular, that complex organized systems are not ontologically different than their low-level components.    Evidence for this includes the fundamental fact that complexity emerges only tentatively, that in simulations complexity emerges only in a small number of cases—for an example see also Stephen Wolfram (2002), p. 57.    Complexity emerges randomly, and nothing in nature preconditions the appearance of complexity—which seems to imply that complexity is generated only by low-level processes.    Kauffman describes complexity as "order for free" (his Chapter IV).    He suggests that reductive analysis can fail in general because some systems are too complex to be modeled by anything other than the system itself, so reductive analysis cannot provide a model useful for prediction or simulation—but this is an empirical limit on reductive models, not a metaphysical problem with reductionism in the abstract (see p. 22).    In effect, work like Kauffman's is still not a fundamental paradigm shift away from reductionism.    An example of a thinker who does reflect such a paradigm shift is Robert Laughlin (2005), who suggests that reductionist paradigms are conceptually and ontologically flawed, and that these paradigms have exercised a deleterious influence on the research programs, interpretations, and instinctive thought-patterns of scientists trained in the academic mainstream.    "In passing

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general, emergence theories assume that explaining the lowest level of phenomena is less important than explaining organizational patterns and higher-level configurations. Both reductive and emergent paradigms tend to see complex phenomena in levels of organization, with higher, more complex levels composed of less complex parts. Reduction tends to explain downward through this hierarchy: to explain the higher levels, it is necessary to explain the lower levels. Emergence explains upward: after we have explained the lower levels, it can be quite difficult to explain where higher-level behaviors and organization come from. Special methods and models are often required to translate our knowledge of lower levels to successful theories of higher levels.

Emergence and reduction have important philosophical ramifications, however, because high-level organizational patterns do not necessarily supervene on the nature of low-level phenomena. Emergence studies the organizational patterns found amongst sets of entities of a given type; it does not necessarily arrive at (or aspire to) a complete description of these entities. For example, an atomic nucleus is an organized collection of fundamental particles (quarks, in this case). It is possible to analyze nuclear structure without deciding whether quarks are point-particles or strings. The string/point-particle distinction is irrelevant to how quarks are organized into atomic nuclei. It appears that no information will be gleaned by deciding whether quarks are one or the other that will affect our models of nuclear structure. In

into the Age of Emergence we learn to accept common sense, leave behind the practice of trivializing the organizational wonders of nature, and accept that organization is important in and of itself—in some cases even the *most* important thing" (Laughlin, pp. 218-219).

an emergent paradigm, then, the underlying question loses its importance.   The failure of

physics to decide between the two theories may be frustrating, but it is loses the urgency which

this question takes on for reductionism.   This demonstrates a trait of emergent theories which,

depending on one's perspective, may be a strength or a weakness.   In general, emergence

theories both do not and cannot make definitive claims with respect to the ultimate constitution

of the simplest units relevant to the theory in question.   Emergence theories study these simplest

units with respect to the contributions they make to higher-level organization.   By necessary,

they are agnostic with respect to low-level properties that have no high-level effects.   As a

result, emergence theories (unlike reductive theories) do not offer a definitive description of the

phenomena in question: details which are not organizationally significant are not considered by

the theory.   On the other hand, emergence theories do not *need* to offer complete description: a

certain amount of descriptive open-endedness is appropriate.   Emergence theories do not take on

the metaphysical burdens which attach to reductive theories.   Whether this is works to their

credit or discredit depends on whether or not we look to physical science to answer metaphysical

questions[5].

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[5]   In another sense, emergence theories can sometimes help reductive theories achieve explanatory

completeness by filling in explanatory gaps between low-level and high-level theories.   Such theories, for

example, can explain how life emerged from nonliving molecules.   By assessing the likelihood that complex

patterns can emerge from simple foundations, emergence theories can advocate for a metaphysical preference for

ontological simplicity and nonteleology over theological or teleological approaches to the origin of life, of

consciousness, and other mysteries.   In this guise, emergence theory acts as a complement to reductive theory.

More radical kinds of emergence theory, however, seek to challenge rather than complement reductionism.

Emergence and reduction need not oppose one another.   Ideally, explanation needs to work both up and down across hierarchical levels, so a complete theory needs to succeed on both emergent and reductive criteria.   This is why Robert Barrow, in his *Theory of Everything*, seemed to take pains to accommodate both viewpoints and even to modulate between them[6]. Both perspectives are part of the machinery of contemporary science.   The debate is still significant, however, in part because one paradigm tends to subsume the other, and in part because the divide is cultural and institutional as well as purely conceptual.   A reductive paradigm will incorporate emergent methods, and vice-versa, but the difference between a paradigm and a method is that the paradigm bears the weight of philosophical significance.   A scientific paradigm is more than a guiding principle for doing science: it embodies how we see science in its relationship to the world and to human knowledge and experience in general.   Any scientific paradigm, taken to its logical conclusion, represents or implies a specific world-view.

Having sketched an overview of the emergence/reduction debate, the remainder of this introduction will explore the implications of this debate for phenomenology and will begin to discuss how phenomenology can shed light on this debate.   The introduction will conclude with a summary of the chapters that follow.   I will begin, however, with a discussion about qualia.

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These more radical theories, I believe, must on pain of inconsistency abandon the metaphysical aspirations which reductionism takes on; we then have to decide whether metaphysical open-endedness is a worthwhile trade-off for simpler, less ambitious theories.    I will discuss this question in more detail in Chapter 5.

[6]    For more, see p. @ below.

**Excursus: On scientifically explaining qualia.**

The interplay between the emergence/reduction debate and phenomenology works in two directions. On the one hand, philosophy of mind is an important terrain for the debate. Convincing arguments that one or the other of these perspectives may yield solutions to problems about the mind would be a strong point in its favor. On the other hand, phenomenology offers some ideas which may shift the terms of the debate.

The competition to "explain" consciousness does not necessarily resonate with phenomenology, because phenomenologists themselves disagree on whether science can or should explain consciousness, that is, whether such an explanation (or the lack thereof) harms or benefits the phenomenological paradigm. Some phenomenologists might therefore find more in common with emergentists, who may lend support to the notion of consciousness as inexplicable on some level. Personally, I believe that the failure of science to explain consciousness (or even to begin such an explanation) cannot help phenomenology. Phenomenology is based on introspection, and failure to situate the contents of introspection (qualia and conscious states) in the natural world undermines our faith in introspection as a forum for structured, publicly disputable argumentation. Some might note, on the contrary, that the contents of consciousness are immediate to our minds and that natural law is available to our minds only *through* consciousness. From here, one might conclude that explaining consciousness in terms of natural law is logically impossible, and that failure to do so works to the credit of introspective analysis, because it makes such analysis a necessary part of epistemology. This might be Husserl's own

view.    But I am not persuaded by this argument; in particular, I do not believe that the definitive

property of consciousness is its "immediate presence to the mind".    I do believe that conscious

states *have* this immediate presence, but in my opinion the starting-point for phenomenology is

not this immediate presence as a bridge between external reality and the mind, but the structure

*of* this immediate presence, i.e., the spatial, temporal, and affective patterns displayed by qualia

and by other fundamental units of mental reality.    I will clarify this point in a second.

The other direction in which phenomenology relates to the reduction/emergence debate

concerns phenomenology as a method and perspective which can arbitrate this debate: in

particular, which can assess how each paradigm fits into our larger philosophical world-view.    I

will demonstrate this point by continuing the above comments about qualia and conscious states.

First, let me fix some terms.    By *consciousness*, I mean awareness and experience in

general: both the qualitative, affective dimension of experience—the specific "feel" of things

like red sensations and pains—and cognitive acts, such as judging something to be the case,

insofar as I am actually aware of that judgment.    Consciousness consists in all mental reality

which I am aware of.    For any occurrence in consciousness, I must be able to declare as it

occurs: "now I am judging that ___" or "now I am experiencing ___".    Consciousness therefore

excludes subconscious cognitive acts.    For example, there may be considerable mental effort

expended in walking down the street, but much of this effort is below the level of conscious

awareness, although occasionally it will rise to this level (for example, when the street is broken

and care must be exercised).    Consciousness also excludes most of my knowledge and beliefs,

except for those which are directly relevant to my conscious experience at any given point in

time.

Conscious phenomena can broadly be divided into *propositional attitudes* and *qualia*[7]. Propositional attitudes involve first the cognitive act of thinking about states of affairs, i.e., registering them as mental entities, and, second, taking a stance toward them, i.e., believing, doubting, or desiring them.   Qualia are the basis of interaction between the mind and the world, and therefore have a place in propositional attitudes, but when discussing qualia in themselves we are interested in their phenomenal feel rather than their determinate content.   For example, when I feel a red sensation, I am disposed to believe (to accept the proposition that) something is red; however, if I analyze *red* as property of a sensation, I am not concerned with our tendency to form judgments as a result of qualia; I am concerned with how qualitative feels occur to consciousness in the first place.   There are different ways in which I can come to judge something as red; only a subset of these involve actual red sensations.   Qualia are therefore more restrictive than propositional attitudes, even though any quale has at least one propositional attitude associated with it (a red sensation includes the belief "this (the sensation) is red"; and usually also the belief that something (in the world) is red).   I agree with John Searle that problems about qualia are the fundamental problems in the philosophy of mind[8].   I think it is useful to attribute propositional attitudes even to nonconscious entities: for example, security software will quarantine a file because it *believes* it contains a virus.   I think the word "believes"

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[7]   *Cf*. David Woodruff Smith (2007), p. 189.

[8]   Searle (1997), 28-29; (2002), 25-26.

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here case is useful and intuitive.   A robot scanning luggage might sound an alarm because it believes a certain shape could be a bomb.   Deep Blue might move the rook because it *believes* the rook is vulnerable, and *fears* it might be captured.   I see no reason to restrict propositional-attitude terms like "believes" and "fears" to conscious beings.   Entities which entertain propositional attitudes exhibit intelligent behavior; and intelligent behavior can be discussed in functional terms.   So we have at least some research program toward explaining human intelligence.   Science, however, has no real insights into the origin of conscious awareness itself, as a phenomenon separate and apart from its functional place in intelligent behavior.   Why do we feel pain, as opposed to simply knowing that something like a hot stove is dangerous?   Why, when touching something hot, do our hands not only instinctively recoil, but we also feel pain?   If qualia are defined by their functional roles, then qualia themselves, as experiential details, seem ontologically superfluous.

Yet a scientific explanation of consciousness, if one is possible, demands a scientific explanation of qualia.   As we consider the prospects for such an explanation, it is important to clarify what actually needs to be explained.   First of all, for any specific quale we believe that someone (or something) who experiences that quale knows "what it is like" to do so quale.   Talk about qualia implicitly includes talk about "what it is like" to experience them[9].   The "qualia problem" comes about because scientific data about a quale, no matter how complete, may never explain this "what it is like".   A biologist with vast knowledge about bats may never know what

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[9]   The phrase "what it is like" having been popularized by Thomas Nagel's (1974) "What is it like to be a bat?".

it is like to be a bat.   The question is whether we *can* discover this "what it is like" with *sufficiently* vast knowledge, or whether no amount of scientific data can ever explain the qualitative realm.   Regardless of our intuitions on this question, it is useful to preserve the concept of "what it is like" as a clarifying mechanism for talk *about* qualia, given that we have no unambiguous way to define what qualia *are*.   As objects of scientific exploration, qualia enter our language not through exact definition, but on the heels of a "way of talking".   Philosophers of mind generally agree about what the qualia problem is, even thought very concept "qualia" enters our vocabulary only indirectly, embedded in an overall discursive framework of qualia-talk: talk about "phenomenal feels", "what it is like", etc.

To analyze qualia, then, we need to analyze qualia-talk.   One fundamental distinction appears within this talk.   Suppose I believe that other people know what it is like to have qualia similar to mind—to have red sensations, for example.   If we both have red sensations, we both know what they are like.   This does not mean, however, that you and I have *the same* sensations. If we both look at something red, I believe we have *similar* sensations.   If you look away, I believe that you no longer have these sensations, even though I still have them.   So I don't believe that you have *my* sensations, or that you have sensations because I have them.   I believe that we have similar sensations, sensations that are "like" one another, where "like" comes from the phrase "what it is like".   Suppose we call the "likeness" of a quale its qualitative character. The qualitative character "red" is the specific feel associated with red qualia.   Someone who is colorblind cannot have qualia with this character, and therefore does not know what it is like to have these qualia.   A given red quale, however, is localized in one person's consciousness.   To

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specify any single quale *q*, it is necessary to specify a qualitative character, a conscious subject *S*, and a temporal episode in which *S* experiences *q*.

Having distinguished qualitative character from qualia themselves, we see that there are really two qualia problems: first, explaining where qualia come from; and, second, explaining how they acquire their specific character. The first question is: how do we explain consciousness itself? Why do some things in nature have conscious experience, and others not? The second question is: why is red different from blue, for example? I think the former is the really interesting question about qualia, even if the latter question is just as difficult.

Searle himself has an emergent theory of consciousness; he believes that consciousness is an emergent property of the physical nervous system. His theory, however, is a rather weak kind of emergentism, one which can be integrated with reductionism. Searle believes that material objects can, if they are configured properly (along the lines of the human mind, for example), acquire conscious states. Conscious states are not something ontologically outside the physical realm: consciousness is one ontological region within material nature. Searle, unfortunately, never really justifies his faith in the physical basis of consciousness. Against Searle, prominent philosophers of mind, among them Jaegwon Kim and David Chalmers, have expressed doubts on whether *all* aspects of consciousness can be physically explained, even if many of them can[10]. Among theories of mind, the prominent current debate is probably that

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[10]    *Cf*. Kim (2005), p. 172.    The doubts he expresses about explaining qualia bear a surprising resemblance to arguments offered by Chalmers in his ().

between physicalists, who assume that consciousness itself, including qualia, is physically

explainable, and functionalists, who aspire to explain many aspects of mental life, but who

remain agnostic on whether qualia can be explained.   Functionalists try to *incorporate* qualia

into their picture of the mental in various ways: for example, red qualia are interpreted as

dispositions to agree that things are red.   In doing so, however, functionalists tend to explain

qualia in terms of the role which they play in cognitive operations such as making

judgments—operations which, as I argued above, non-conscious intelligent beings also perform.

Functionalism therefore refuses to find, in qualia, features of consciousness as something *apart*

*from* intelligent behavior.

The debate just mentioned is apparently driven by the following: qualia, by definition, are

not *public* objects; any quale is an episode in a single consciousness.   Even qualitative character

is public only under the assumption that different minds feel the same types of sensations. I

cannot *prove* that your red is the same as my red.   It seems hard to conduct scientific

research—which by definition involves the public consideration of theories and evidence—on

wholly private entities.   Functionalism gives us a way to redefine these entities in more public

terms.   In place of ephemeral red qualia, for example, we have public speech acts, such as

vocalizing the word "red".   In place of pain, we have publicly observable behavior, such as

writhing and moaning.   Functionalists assume that in replacing private qualia as objects in need

of explanation with their more public associates, we make it easier for science to approach a

theory of qualia.

Is this strategy helpful?   I have suspicions that it is not.   Consider how we would begin

to characterize qualia as private objects, even though this requires a leap of faith as we presume

that our own qualia resemble other people's.   Although my qualia are not accessible to others, I

can still, in a public forum, discuss some of the structural features which my own qualia bear.

My conversants in a hypothetical forum can debate these points through an introspective study of

their own qualia.   This public investigation carries weight only if we assume that our qualitative

experiences are structurally similar, which cannot be proven; however, we may be prepared to

consider this similarity likely enough to be plausibly assumed.   In that case, I can propose a

structural analysis of qualia to submit to the public forum, and request assent or dissent grounded

on others' own introspective considerations.   In particular, qualia seem to have the following:

- First, temporal delineation.   A quale has a temporal episode where I am aware of it.

- Second, a spatial separation from its surroundings.   Qualia are individuated from the context of other qualia which form my entire perceptual consciousness.   A red quale, for example, is a colored region which is isolated as a single experience because there are other colors in the background which contrast to it.

- Third, an "affective" relation to my consciousness.   To be precise, qualia are episodes happening within my consciousness, and happening *to* me.   They are not controlled *by* me.   I can, if I so choose, imagine something red.   There is an imagined red sensation which accompanies this mental act: a quale in the imagination.   This quale, however, lacks the vibrancy of real, perceptually present qualia.   A quale only seems "real" if it is something I cannot control, which I cannot will to be blue rather than red, or to go away entirely; and therefore if it appears to be caused by reality external to my mind, as opposed to caused by my mind itself, by its powers of imagination and its free will.

Having laid down some features of qualia, then, I submit the following: even if qualia are not

physical objects *a priori*—in other words, if there is room to doubt whether or not they are part

of physical nature—they *do* have certain features reminiscent of physical objects.   We might

call them "sort of physical" or, to be more technical, quasi-physical. Like physical objects, they

have spatial and temporal delineation, even though the space and time proper to qualia is the

inner spacetime of conscious experience, which is not necessarily "objective" space and time.

In addition, because qualia are not caused by my mind, they certainly seem to be caused by

external reality: and this reality seems to be the reality studied by physical sciences, the reality of

physical things. I *experience* my red quale as caused by the redness of a physical object: as a

*physical* redness, a property of physical things which *translates* into or *causes* a qualitative state

in my mind, but does not *originate* in my mind.

We may not have a clear program to physically *explain* qualia, but if qualia do, indeed,

have this quasi-physical structure, or quasi-physical way of being, then this gives us reason to

*seek* a physical explanation for qualia. Qualia and physical reality are not two completely

unrelated ontological regions; there is more than pure faith in physics behind the assumption that

physics could, one day, have the means to study qualia on their own terms. I therefore must

disagree with Kim, for example, when he claims that although this explanation may work in the

end, there is no reason expect or to hope for a physical explanation of qualia[11].

I think it is a cruel irony of intellectual history that theories of mind which try to make

qualia more amenable to scientific explanation, by redescribing them in functional or behavior

terms, actually loses their quasi-physical structure, and therefore defines away one of the best

motivations for pursuing a scientific explanation for qualia in the first place. Qualia are

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[11]     *Cf. Physicalism, or something near enough*, p. @.

quasi-physical because they have spatio-temporal form, and because they have an affective

reality in my experience which suggests that they originate from external, mind-independent

reality.   If we choose to redefine qualia as functional states, as behavioral dispositions, or as

elements in chains of reasoning which lead to propositional attitudes, then both their

spatio-temporal and affective aspects are lost.   Suppose, for example, that we redefine red qualia

as dispositions to assent to "this is red".   A red quale, if we remain true to qualia as private

episodes, has a spatiotemporal boundary and an affective presence in my experience.   My

*disposition* to assert "this is red", on the other hand, has neither spatio-temporal form nor

affective character: I can tend believe that something is red for many different reasons, some of

which involve no affective experience.   Robots and computers, who have no affective reality,

can also be disposed to assert that things are red.   Redefining qualia in propositional or

dispositional terms tends to undermine the distinction between conscious beings and

non-conscious, but intelligent ones (beings which exhibit some intelligent behavior).

Consciousness, however private it may be, is nonetheless a theatre for states and

contents—qualia, for example, as *contents* of consciousness or as *components* of conscious

states—which have affective and spatio-temporal form and, therefore, a quasi-physical way of

being.   The quasi-physical aspects of qualia are evident only when we construe qualia *as* private

entities: the various publicly-accessible occurrences which may be associated with qualia lack

this quasi-physical dimension.   With respect to physical explanation, then, defining away their

private character may be regress rather than progress: perhaps the only way to pursue this

explanation is to remain committed to qualia's private character, and to take seriously the ways

in which, even as private objects, qualia still seem to take on some of the characteristics and

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causal determinateness of physical things.

**Phenomenology and the reduction/emergence debate.**

I will now use the example of qualia to demonstrate the kinds of ontological issues which occur in the development of scientific theories and which help inspire the different solutions favored by emergentists, on the one hand, and reductionists, on the other.

Why, despite their quasi-physical aspects, do qualia pose problems for science?   The fact that they are not publicly accessible is part of the answer to this question.   There is probably more to the answer, however.   Consider any given quale: for example, a red sensation of mine. I have a red quale, and decide to analyze it as an example of qualia in general.   I therefore refer to it, either while it is phenomenally present, or as something in memory.   I fix my attention on it.   To treat a single quale as a case study for analysis, I need to "nominate" it as an object of discussion in the public forum.   I can do this, arguably, because my conversants have similar experiences of their own.   We can therefore agree to talk about my quale, with each participant in the discussion understanding the quale in consideration either through the lens of their own, similar experiences, or by imagination.   Perhaps the terms of public discussion are here being muddled; and yet this, in and of itself, does not seem like an impossible burden for our discussion to bear.   Inexact as these acts of imagination may be, as we reconstruct in our own minds the experiences which others have, it does seem as if we can discuss our private experiences; that a rigorous discussion of their properties and structure is possible.   Privateness,

by itself, does not seem like the chief obstacle facing this discussion to the degree that it aspires to the formality and credibility of science.   The deeper problem is perhaps the following: when I nominate my canonical red-quale as an object of public discussion, there is not much that I can say about the quale itself, even if I can give a fairly detailed analysis about how it fits into my conscious experience as a whole.   I cannot describe this red quale in much detail, even if I can call it "red".   The term "red" is a poor description, and it works in the public forum only to the degree that all participants can look at things which are called red, and consult their own experience as a guide to the phenomenal character which the community means by "red".   There is no language which we can use to *describe* our qualia that would aid in their scientific examination.   This is atypical in the scientific realm, because usually the first step toward explaining something is to describe it in detail.   In this case, the quale under discussion—my red sensation—is introduced into the public arena not because it has been described in detail, but by a kind of introspective accord between myself and my conversants.   They accept my designation of this quale on faith: I declare that I have singled it out in my mind.   The quale is therefore *referred to*, but is not described in any detail.   It enters public discourse only *by being referred to,* as a kind of undescribed "this", communally assumed to be *there*, but lacking any specificity in the terms of our language other than the primordial phenomenon of reference.

To the degree that they are objects of public discourse, qualia have no substantial place in language *other than* the fact that we can refer to them via indexical terms like "this": *this quale, this sensation*, etc.   I suspect that this *reference without description* is part of what makes qualia seem unscientific, seem to be at best second-class citizens in our scientific vocabulary.   Those

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who find this problematic are doubtless inspired by a paradigm in which phenomena are good candidates for scientific explanation to the degree that they can be meticulously described; to the degree that they have a place in our language beyond the minimal presence expressed by indexical expressions like "this".   This is a judgment on what makes scientific language successful, and how things presented for scientific exploration, or permitted in the domain of scientific thought, are to be defined.   Any scientific activity must suppose, explicitly or not, a theory of how scientific terms—and, by extension, the minds of scientists as they use these terms—refer to the things science is explaining.   Science has its own version of a word-to-world mapping problem.   I suspect, and claim, that the reduction/emergence debate is driven at least in part by two competing views of this mapping problem, two paradigms as follows:

- On one theory (associated with reductionism), science terms and scientists' minds *directly refer* to particular worldly things.   Ideal explanation works with a language in which particulars and individuated and their properties, behaviors, and dispositions fully explained.   A complete theory of electrons, for example, would permit us to single out any particular electron and explain its activity, accommodating for quantum randomness.

- On an opposed theory (associated with emergentism), explanations are models of high-level, complex behavior.   Pieces of these models may, indeed, refer to particular things, such as electrons.   However, this referring occurs only in the context of a model. A *decontextualized* reference to an electron, for example, is impossible or nonsensical: any real electron occurs in the context of a physical system which governs its behavior.


For an example of the first theory, consider particle accelerators which try to produce exotic subatomic particles which are too heavy to readily occur in nature.   These tend to exist for only a fraction of a second.   Needless to say, they cannot be seen directly; instead their

presence (or their having been present) is inferred from the printout of a bubble chamber. Nonetheless, physicists studying the printout can conclude that a particle did indeed exist, and can refer to that particle, both with language and in their minds. On this paradigm, a symbol and a mental state is linked to a material thing which was there in space, for a certain period of time.

For an example of the second theory, consider Robert Laughlin's discussion of sound waves traveling through a solid[12]. Physics conventionally considers light as a kind of particle (a light ray as a collection of photons): photons are simple presences in space and time. Sound, on the other hand, is construed as a "phenomenon" rather than as a particle: there is no sound-particle. Nonetheless, sound *is* quantized (i.e., there is a "minimal possible value" of sound) and, Laughlin argues, sound waves are mathematically very similar to light waves. He suggests that it is pure prejudice on scientists' part to consider light a "real" particle and sound only "analogous to" a particle. For Laughlin, the goal of physics should not be to reduce physical reality to a set of tiny particles. Instead, physical reality is a collection of distinct phenomena, or (in my terms) *ordered situations*, such as sound traveling through a solid. Reduction should stop when we have arrived at an ordered situation which can explained by a single model. Any further reduction is an explanatory convenience *of the model* and does not imply that the situation being explained is *ontologically* reducible. Laughlin, who is not writing for a philosophical audience, does not frame his critique of reductionism in ontological terms,

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[12]    *Cf*. Laughlin, pp. 106-112.

but I think this is a fair interpretation of his beliefs.   Laughlin, and other anti-reductive

emergentists, are really outlining a new ontology, one whose basic constituents are *ordered*

*situations*.

Emergence, I believe, is fundamentally a reaction against *ontological* reductionism,

against certain ontological theses which are implicit in modern science but which are

metaphysical prejudices, not necessarily rooted in empirical fact.   One of these prejudices is

what Robert A. Wilson calls "smallism": "discrimination in favor of the small….Small things

and their properties are seen to be ontologically prior to the larger things that they constitute, and

this metaphysics drives both explanatory ideal and methodological perspective"[13]. There are

other prejudices, however: that *things* are ontologically prior to events and processes; that

properties are ontologically dependent on substrata which instantiate them; that patterns of

organization are dependent on things which are thus organized.   Science shows a preference for

the *bare particular*, and only after that particular is ontologically specific can we then discuss

how it is organized.   Reductive ontology seeks a story about the particulars which instantiate

properties, and which take on patterns of organization, before we can even begin to consider

properties and organizational patterns themselves.   This is why, for example, the problem of

identifying the smallest possible physical particles is so important; and also why theories which

reduce the complex typology of small particles to variations on one *single* material thing, such as

a quantum string, are so popular: the distinctions between electrons, quarks, photos, and the like

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[13]    Wilson (2004), p. 22.

become *part of the theory*, rather than part of the preconditions of the theory[14].   One is left with the most general possible notion of material being, a kind of fundamental particle to exemplify material reality as such.   Electrons, quarks, photons, or any other particle of specific *type* cannot exemplify material reality in general, because each one exemplifies only a given type: when, however, we can theorize particles as *strings*, where properties like charge and mass are accidents of their vibrational patterns, then strings as such do indeed exemplify material reality in the most general sense.   This is why string theory is favored as a reductive base for physics.

So reductionism, in my opinion, is motivated in part by what Husserl calls "eidetic generalization" attached to specific ontological regions: for the region of material reality, we want to identify the most general possible notion of "material being" and develop a theory around this notion; the resultant theory is a reductive base for other theories whose context or domain is material reality as a whole.   Along these lines, *qualia* exemplify the region of consciousness or mental reality: there is no consciousness without qualia, and all qualia belong to consciousness: the theory of qualia is therefore a reductive base for other theories concerned with the mental and cognitive lives of conscious beings.   The search for a reductive base is also a search for the most general exemplification of a region of being.   Those who are *critical* of reductionism—for example, Robert Laughlin with his critique of string theory[15]—also implicitly criticize this metaphysic of exemplification.   We can assume them to oppose the notion that

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[14]    See p. , below.

[15]    *Cf*. Laughlin, p. 211.

material reality is exemplified by the smallest possible material objects.  Wilson's critique of

"smallism" is also a critique of the presumption that something small is a better paradigmatic

example of material existence (or existence in some other region) than something large.

What motivates this critique of exemplification?  Presumably, emergentists are reluctant

to assume that material reality is exemplified by particular material things.  They intuit that

material reality is better characterized by the organizational principles at work in nature; by

processes, tendencies, phenomena. *Reality*, in general, is not a collection of particulars; reality is

patterns of organization.  The distinction I made earlier between scientific language as direct

reference and as modeling the world resonates with this current distinction between conceptions

of reality.  If reality *is* particulars, then language and the mind connect to reality insofar as

linguistic symbols can link to, and the mind intend, particular objects.  In the reductive

paradigm, for the mind to "know" reality, it must come in contact with particulars within this

reality: and so I will argue that the phenomenological theory of intentionality has (perhaps

surprisingly) a metaphysical traction with reductive ontology.  For language to mirror reality, it

must have terms which refer directly to objects in reality—not through the media of descriptions

or models, but through a pure direct reference, a reference to the object in-itself.  If I say "this

red book", then I am referring to the book, even directly referring to it, but only through the

medium of certain of its properties (its being red; indeed, its being a book).  Language, to "map"

to the world, must map to the decontextualized particular, to the particular stripped of its

inessential properties.  For reductive ontology, any contextualization of an object is inessential

to its inner being; any object could potentially be a universe unto itself.  Any electron could

theoretically exist in a world where no other physical objects existed.   On the other hand, if we reject this decontextualized picture of reality, if we believe that reality is *essentially* a tableau of contexts where objects occur in consort, in organized patterns, then language is free of the need for idealized reference.   Language does not ideally, i.e., decontextually refer; language *models* reality, rather than picks it apart.   Similarly, mental states model reality; they are holistic images of material situations, rather than collections of decontextualized intentional acts.   The phenomenological picture of intentionality as the mind directed to particular objects, whose context is reduced to the "horizon" or the "perceptual background", is jettisoned in favor of a more holistic mirroring between the structures of the mind and the order of its environment, its environing situation.

Phenomenology and reductionism are usually seen as combatants rather than partners. However, when the debate between reduction and emergence is laid out in this way, rooted in ontology and in the theory of reference, I think we can see areas where phenomenology edges closer to reductionism than to emergentism.   Among them note the following:

- Phenomenology treats qualia—rather than holistic mental states, such as propositional attitudes—as exemplifications of mental reality; much as (reductive) physics regards fundamental particles like electrons and quarks as exemplifications of physical reality.

- Phenomenology regards intentionality non-holistically, as (paradigmatically) mental relation to particular things.   To be sure, the objects thus intended are themselves, typically, complex: we cannot have perceptual encounters with *true* particulars, like electrons.   Nonetheless, the reductive analysis of fundamental particles can be seen as an idealized generalization of our intended larger physical objects, and the particularity of the intended object *qua* intended is a phenomenological source for the reductive ideal of the bare or *absolute* particular construed as the true or ideal object of science.

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- Husserl's theory of "dependent moments", first presented in the third *Logical Investigations*, suggests a property/substrate relationship closer to the reductive viewpoint, in which properties are ontologically dependent on substrata which bear them, as opposed to a more holistic viewpoint, in which particulars are always contextualized, so their properties are not logically "separate" from them.

This list is not intended to be definitive; there are other areas in which phenomenology seems to shade in the direction of emergence theory.   In addition, phenomenology is not a rigid metaphysical system; the ontological implications of Husserl's work, for example, differ in important ways from those of Heidegger, Merleau-Ponty, Levinas, or Sartre.   Some of these authors seem closer to the reductionist viewpoint, some closer to the emergentist.   My own opinion, however, is that phenomenology skews toward reductionism at the deepest levels; that is, as it theorizes the *fundamental nature* of mental reality and of conscious life.

Both phenomenology and reductive physics traffic in objects which are ontologically ambiguous.   Phenomenology, on the one hand, is "about" qualia, which are objects of public discussion even though they are ontologically private.   Phenomenology is a discourse about qualia which cannot be publicly described nor perceived.   Physics, too, is about particles and entities which we can observe only indirectly, and which, if the reductive ideal is successful, enter language only by being *posited*, not *described*.   The physicist's ideal is to abstract away devices which could be used to *describe* physical entities, to make these descriptive possibilities part of the theory: the electronness is abstracted from the electron, for example, reduced to an inessential property of the electron, and what is left behind is a "string" of matter, whose vibrational patterns can change at any time, causing it to become some other type of particle.

Instead of terms like "electron" being available to draw a particle into language by describing it, these terms are abstracted from, even "bracketed", so as to arrive at the physical particle in its full generality.   What is left, though, is a particle which has no essential properties other than being *there*, coiled in a given region of space.   At this level of generality, the particle cannot be described, or modeled; its existence is only that of a pure "this", a pure haecceity.   As such, it can enter scientific language and public debate only by a collective agreement to recognize its existence.   It does not exist *in* the public forum, in the sense of being described by a model which can be publicly tested against observation.   Both phenomenology and physics are committed to public debate about objects which are ontologically reclusive, which, by nature, do not exist as such on the public stage.   It is part of the machinery of these theories to compensate for this reclusiveness, but not everyone accepts that machinery.   Not everyone accepts the notion of public examination of non-public entities.   Emergent theories, with their emphasis on publicly accessible *models* as opposed to non-public *objects*, find some of their appeal in their power to resolve this potential paradox.   There is no question, I think, that reality as described by an emergent paradigm (for ontology)—as a system of distinct ordered situations which science and language can model—is more accessible to public reason: on this paradigm, the fundamental units of physical (and perhaps mental) reality exist in the public arena.   On a reductive paradigm, they do *not* exist in the public arena, and theory must accommodate this reclusiveness in order to be a publicly structured intellectual activity.   This is perhaps an argument in favor of emergentism, but I would caution that many of our most respected theories—not only in the natural sciences but also in the human sciences and in ethics and philosophy—are based on public discussion of necessarily private or non-public entities.

It is easy to imagine versions of emergence theory applied to the social sciences as well as to the natural sciences; indeed, one can argue that social science, at least in the domains of economics, sociology, and anthropology, has always followed an emergence paradigm. There are some areas, however, in which non-public entities truly are the fundamental theoretic entities of the social sciences. Consider the theory of human rights. We could, if we are so inclined, develop a high-level theory of human rights: we could consider what benefits come to societies as a whole from recognizing certain fundamental rights, we could analyze the emergence of rights-based legal systems as a large-scale pattern in social and political history. Somehow, I think, this would be missing the point. The discourse of human rights is committed to the particular, to the rejection of large-scale generalizations. Policies which seem defensible when viewed from a wide angle are judged morally culpable when a few individuals are severely harmed by them. One or two particular images—the photos from Abu Gharaib; Maher Arrar tortured in his cell in Syria—are enough overpower an entire war, an entire administration, an entire historical project (such as the "war on terror") in the eyes of history. One of the enticements of reductionism is physics is that it permits one single image (a bubble-chamber printout which proves the existence of a theorized particle, for example), or one single theorem, to embody an entire region of physical existence. We, in our society, have a parallel aesthetic sense of the power of one image to embody an entire historical episode: a handful of famous newspaper articles embody the entire Vietnam war; a few lines from Yeats' *The Tower*, from Shostakovich's *Babi Yar* symphony, or one figure from Goya's *Third of May*, all embody entire historical events. There is a reductive streak in our cultures' ethics, aesthetics, and memory.

I will argue that a connection exists in our intellectual life between the reductive emphasis on the particular physical object, the *local* region of physical reality, and the particular mental episode, the single quale, the local conscious experience.   Our scientific preference for the reductive particular perhaps originates from our own self-consciousness: our sense of ourselves as occupying a private world potentially decontextualizable from our social and cultural environment, our attachment to the fleeting moment as exemplar of subjective reality, to immediate, local, temporal subjective experience, the localized subjective moment captured in a poem, a painting, a memory, etc.   We have, I believe, a reductive view of subjective reality and of human rights, and the latter I think derives at some level of the former: we are prepared to demand rights for ourselves and others because we see in all humans a private, fleeting, subjective world, one which the public should not try to appropriate.   This paradigm, I believe, is a relative recent one; I think both reductive science *and* our modern, liberal notion of individual subjectivity and human rights are products of the same historical epoch, which began towards the end of the 18th and early 19th centuries.   Perhaps the paradigm will change, and perhaps emergentism foretells a broader rejection of reductionism in areas such as ethics and social science.   If this new paradigm comes, however, we need to be sensitive to how our ethical and political theories may also be affected: on how the shifting terrain in the philosophy of science can reverberate through the sciences in general, including the social sciences; and we need to ensure that our crucial moral assumptions, and their rationales, are not weakened.

**Outline of the following chapters.**

The above discussion is intended to present in outline the relationship which I think exists between phenomenology and the debate between reductionism and emergence. I think phenomenology can link this debate to our larger intellectual culture and our culture in general, and can also help articulate the difference between the sides of the debate. I also think that phenomenology leans in the direction of reductionism more than most people might assume. The following chapters will try to refine my arguments on these points. The first three chapters will discuss more parallels between phenomenology and contemporary (and reductively-inclined) physics. Chapter 1 will refine my account of phenomenology's conception of mental life by discussing the "natural attitude" and the critique thereof. Chapters 2 and 3 will present some structural parallels between the physicist's view of physical reality and the phenomenologist's view of mental reality, and I will follow the later Husserl in arguing that the preconceptions and ontological viewpoint of physics is shaped in part *by* the structure of mental reality, because the mind is ultimately the medium which physics uses to perceive the world.

On the other side of the coin, chapters 4 through 6 will discuss some parallels between phenomenology and emergent theories, or theories based on organizational complexity. Chapter 4 will develop a property-theoretic approach to phenomenology which gives us a way to theorize the mind situated in a complex environment and receptive to its patterns of organization. Chapter 5 will discuss the phenomenological theory of mind and compare it to physicalism and functionalism. Chapter 6 will consider different kinds of emergentism, some "weaker" and able to be assimilated to a reductive paradigm, some "stronger" and explicitly anti-reductionistic.

In the end, I will argue that phenomenology can benefit from the ideas and perspective of emergence theory as a way of expanding its methodological compass, and because the world at the level on which phenomenology operates is indeed an emergent, complexly ordered world. I will argue, however, that the reductive paradigm remains closer to phenomenology in its most fundamental analyses of conscious reality and of ontological theory in general.

## Chapter I:    Phenomenological Ontology and the Nature Attitude

In this chapter, I will begin to build my case that phenomenology can be conceptually and philosophically reconciled with modern physics.   Some approaches to phenomenology emphasize aspects of phenomenology where this reconciliation is more difficult, which has resulted in phenomenology and physical science usually being opposed.   I intend to read and to do phenomenology so that the apparent opposition is reduced or eliminated, without sacrificing the spirit or the text of Husserl's original phenomenological work.

I need to state at the outset, however, that I firmly reject a common understanding of phenomenology advanced both by experts in that field and by casual readers, according to which

phenomenology and physics[16] are fundamentally opposed.  I reject not only the assumption that these two fields are *logically* opposed, i.e., that one logically excludes the other; I also reject the weaker assumption that they are *temperamentally* opposed, that their world-views are "stylistically" at odds, and that they are surrounded by fundamentally different intellectual atmospheres.  This may be true in particular cases, but, I claim, one can develop a phenomenology which is consistent with modern physics and also with Husserl's texts.

Reduction has become a crucial topic in modern thought, largely because science assumes that the macroscopic objects of the life-world—the everyday world around us—are

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[16]  From here on, I will say "phenomenology and physics" as a near-shorthand for "phenomenology and natural science in general".   It should be understood that when I compare the methods or assumptions of phenomenology to those of physics, I mean this to comparison to extend, as appropriate, to other natural sciences as well.   This does have on complication, however, namely that all sciences other than physics deal with "high-level" phenomena, and will at times take a holistic, rather than reductionistic, approach to their object of study.   There are interesting parallels between phenomenological thinking and this kind of holistic science, but these parallels are often different from those that exist between phenomenology and physics.   So by "phenomenology and physics" I refer also to high-level sciences to the degree that they are implicitly reductionistic, and assume that their laws and theories are reducible in theory (and sometimes in practice) to low-level physics, e.g., quantum mechanics.   Ultimately, I will argue that phenomenology gives us insights on how to unite reductive and holistic science into a single framework which is reductive where appropriate and holistic elsewhere.

composed of invisible particles which define the laws and properties of the macroscopic world. The successes of reductive science explaining the macroscopic world has made reductionism more than just a research program: it is a world-view to be articulated, and whose consequences need to be explored. At the same time, we have a sense, which can be hard to articulate, that a macroscopic object is somehow more than just the sum of its smaller parts. There is an identity and meaning to a high-level object that seems lost in reductive description. The life-world—the world in which human thought and action, including the thoughts and actions of philosophers and scientists—is unavoidably a high-level world. It is conceptually distinct from the world of modern-day physics, even though physicists live in this high-level world, and physics began with the attempt to explain, rather than "reduce", the high-level world. Phenomenological research, dating back to Husserl, gives us a rich vein of texts from which to attack the cognitive dissonance between the high-order life world and the reductive world of physics.

The reputed opposition between phenomenology and physics is due in part to superficial reading, but it is also due to the difficulty which Husserl and generations of his followers have had pinning down such key phenomenological concepts as "natural attitude", "phenomenological reduction", and "transcendental consciousness". For example, Husserl certainly believes that natural science is incomplete without a phenomenological analysis to demonstrate how successful scientific thought is possible for human consciousness. The elements which constitute scientific thought at its deepest levels—space, time, matter, energy, causation, simultaneity, contiguity, etc.—are available to scientific cognition only because they are first present in conscious awareness itself, anterior to scientific thought or to any other cognitive

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activity which involves propositions, position-taking, asking questions, etc.   When we do science, we presuppose that the space and time of our consciousness are also objective space and time, and that the properties of experienced space-time relate to those of world space-time[17]. Husserl does not claim that *there is no* objective space and time, that space and time are nothing but properties of experience.   To attribute such an idealist thesis to Husserl is simply a matter of superficial reading.   Most Husserl scholars recognize a more nuanced interdependence or convergence between objective and experienced space and time: objects appear to us within their

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[17]   Even when they seem to diverge.    For instance, we perceive space as 3-dimensional, but physicists now think of space as 9- or 10-dimensional (space-time being 10- or 11-dimensional).    But this is not a matter of experienced space being different in character from objective space.    The fact that we do experience space as 3-dimensional, is taken by physicists as evidence for the fact that the macroscopic space of the universe *is* 3-dimensional, and that the additional dimensions must therefore be very small (cf. Lisa Randall , ).    It doesn't seem to occur to physicists that our perception might be simply wrong, that there might exist a large-scale fourth spatial dimension which we simply don't experience.    The structure of experience (in this case, our experience of space) is assumed to rule out such a possibility.    This is analogous to how a scientist might question the result of an experiment, but does not question the basic human capacity to observe results, such as a computer print-out. This is not a case, however, of relying on any given observation to confirm a scientific hypothesis: it is a hypothesis (in this case, that the structure of space must conform on high levels to the 3-dimensional model which seems natural to us) derived from the structure of experience itself, rather than from any particular experience (such as an observation).    This is therefore a good example of how physics has an implicit phenomenology which should be articulated so as to state with full clarity the assumptions which physics makes, and how it strategically progresses from consciousness to objective knowledge.

own spatiotemporal horizons, which are objective in the sense that they are properties[18] of the

objects present to us, but which are also subjective insofar they are properties of our

experience[19]. Similarly, Husserl's "critique of the natural attitude" involves transcendental

analysis intended to show that the natural attitude is trustworthy, e.g., that science is possible; it

is not the assumption that our natural beliefs are *wrong*, even if, as part of the process, we are

asked to "suspend" certain beliefs. To interpret this refutation of skepticism as a skeptical

denial of science is simply a misreading. So the blatant examples of supposed conflict between

phenomenology and physics can be dismissed. Leaving this aside, however, it is still true that

phenomenologists have tended to interpret key Husserlian concepts in ways which draw attention

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[18]    Or at least, their duration and extension are properties.

[19]    If a siren, say, lasts for 1 second, we can say that there was a duration in experienced time (our sensory

experience of the sound lasted a certain length of time) and also in objective time (it was a property of the

perceived object, in this case the siren sound, to have been one second long). There is actually just one duration,

however, with two aspects, one subjective and one objective. Similarly, if I see a flash of light coming from off to

my left, it has a location both in objective space and in experienced space, but these two locations coincide: I

experience as coming from "over there", where *there* expresses both a location in the world-as-perceived (up

above the hill two miles south of where I am standing, say), and a location in experienced space (the light caught

my attention from the left as I was looking at something to my right). Objective and subjective duration,

extension, and location mutually imply one another. This mutual implication can be demonstrated via

phenomenological analyses such as the ones I have given in this footnote. So we use phenomenology to

demonstrate the convergence of objective and subjective space-time, not to dogmatically assert that all space and

time are subjective.

to the differences, rather than the similarities, between phenomenology and physics. In what follows, I will endeavor to read these concepts so as to highlight my belief that phenomenology and the natural sciences share certain key problems, assumptions, and world-view.

**The Natural Attitude, and the critique thereof.**

The literature has a tendency to define "suspending" of the natural attitude in terms of a "suspension of belief", implying that the "natural attitude" is identical to the sum total of all which we believe in. This is misleading, although it is true that an important phenomenological method involves considering a given belief as an experiential and cognitive event, analyzing it as it occurs within consciousness, by withdrawing the contents of *what* is believed from the domain of analysis. If I believe it will rain tomorrow, I can consider this belief as a part of experience, ignoring whether it is true or false; if it does rain tomorrow, I can analyze the experience of my belief being confirmed, but when I do so the *accuracy* of the belief is important only insofar as this accuracy is involved in how the belief is experienced. By analogy, I can ignore questions about the truth or falseness of my beliefs in general so as to study them as mental objects, which is a kind of "suspension" of belief (in the sense that it involves a mental stance toward my beliefs as objects of thought, whereas I usually approach beliefs as hypotheses to be confirmed or disproved). So the "suspension of belief" is an important phenomenological method. But this suspension is not equivalent to suspending the "natural attitude".

For purposes of this text, I will define the natural attitude in terms of "rational agency," a

distinct concept and terminology which is not present (to my knowledge) in Husserl.   The

concept of a "rational agent" can be developed by analogy with the idea of an "economic agent"

or a "political agent" from the social sciences.   An economic agent is a participant in the

economic reality of a nation or a region: someone who earns or spends money, makes economic

choices, saves and borrows money, etc.   A political agent is someone who is recognized as

belonging to a political community: as having the right to vote, as protected by laws, as entitled

to certain rights and privileges.   It is presumed that when defining someone as an economic

agent, we are not only defining *what* they are, but also describing their behavior.   In addition,

we are describing contexts or domains of activity in which they find themselves.   When I go to a

store, choose certain products (and not others), pay for them, perhaps even negotiate their price, I

am engaged in a set of actions which can be described in economic terms.   It is also true that

while I am engaged in this activity, the context or horizon where I find myself is describable in

economic terms.   Suppose I am shopping for dinner, without planning in advance what to serve.

I enter a store with the explicit intention of surrounding myself with a realm of possibilities in

which I choose some things, reject others, based on consideration of quality, value, or personal

taste.   I embed myself in a horizon of possibilities whose distinct identities can be described in

economic terms.   The *horizon* of my current awareness is one structured in economic terms.   It

is also true that other horizons surround me: as I walk down the aisles I am doing more than

choosing what to buy and what not to buy.   I also, for example, physically navigate around

things.   My environment is physical as well as economic.   But as I think of myself as economic

agent—or when someone else describes my actions in economic terms—I can "bracket" this

other aspect of my horizon and analyze as a distinct, independent system, the specific parts of my

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horizon (the decisions I can make, the actions I can perform, etc.) describable in economic terms.

To offer one other example, if I am playing a game of chess my movements can be described in terms of the horizon of possible chess moves, bracket extraneous details.   The fact that I moved the rook to a8 is important; the fact that I lifted it with two fingers and not three is not.   Or, if I am playing football, the movements I make while the ball is in play can be described in terms of the structure and telos of the game; what I do when the ball is not in play (tie my shoes, drink water, etc.) is extraneous.   In all of these cases we filter out details of our action and experience so as to highlight our involvement in a structured activity in which we can become absorbed, so that our attention is directly mostly to concepts and operations structurally definable within the rules on this particular activity (choosing a product, moving a rook, shooting on goal); and according to this structure I can define myself, or be defined by others, as an *agent* in the specific endeavors of commerce, chess, or football.   "Agency" thus involves the convergence of a definition of the person *qua* agent, of his or her actions, and of the horizon or context in which these actions take place.

A rational *agent*, then, is a person insofar as his or her actions are describable in *epistemic* terms: in terms of *belief*, *judgment*, *observation*, *asking questions*, *gathering information*, etc.   As above, this involves characterizing of persons themselves; of their actions; and of the world as context and horizon for these actions:

- When I describe a person as a rational agent, I describe him or her as a *knower*, a *believer*, an *observer*.   The fact of having beliefs and of making observations is regarded as ontologically part of what it means to *be* human and to be rational.   Human existence itself can be described in these terms.

- When I describe a person as a rational agent, I also characterize his or her actions in rational terms. When I see someone examine a cantaloupe in various ways, I assume that they are trying to infer certain things about it (such as whether it is fresh). When I see someone walking from track to track in a train station, I assume they wish to learn which track a particular train leaves from, and are not walking around aimlessly. There are a distinct set of activities (observing, believing, etc.) which are intrinsic to being a rational agent: one is such an agent insofar as one can engage in such activities.

- When I describe the world in which a rational agent finds himself or herself, I tend to emphasize those features of the world which are relevant to our rational activity. The world is a horizon of facts to be discovered, information to be acquired, observations to synthesize into a coherent world-picture. "The world is everything that is the case"[20]: at least it is for the human person *qua* rational agent.

This concept of "rational agency" yields a succinct way to understand the "natural attitude". The natural attitude is correlate to rational agency. We exhibit this attitude as we think of ourselves as rational agents. As we act in rational or reason-bearing ways, we are always in the natural attitude, usually unconsciously. We are in the natural attitude when our attention is directed to states of affairs, observations, planning, and practical activity in general. All practical activity depends on recognizing what is the case or what we wish to be the case, and so involves a largely epistemic self-orienting to the world.

I find it appropriate to be a little more detailed here. Husserl distinguishes between different *doxic modalities* all of which involve propositional content[21]. A doxic modality is a

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[20]    *Tractatus* 1.

[21]    *Ideas I*, p. 298, and p. 389.

kind of orientation we might have to a state of affairs.   I may expect, wish, doubt, or plan that

this sauce will taste Japanese.   A single proposition (*this sauce tastes Japanese*) can occur in our

thoughts in many ways.   This is worth stressing because it shows how beliefs, or the orienting of

the mind to propositional contents, structure our thoughts even when we are not deliberately

engaged in fact-finding activities.   I leave an apartment in Jackson Heights and head toward a

café in Williamsburg.   As I do so I exercise a web of beliefs concerning geography,

transportation, locations, etc., often subconsciously.   If I had never made that trip before, I might

need to actively seek out information: at what times does the G train terminate at Court Square?

As I do so my mind is deliberately oriented towards facts: a given state of affairs (*the G*

*terminates at Court Square weekdays before 11 p.m.*) is the *object* toward which my mind and

attention are directed.   As I fix attention on this fact, or on the question to which it provides an

answer, I engage in other mental activities, directing attention elsewhere—for example, I study a

subway map.   My mind become engaged with, or *intends*, other things: I look at a map, at my

watch, at the name of my current station, etc.   In each case, though, I embrace these different

intentional entities, or *noemata*, so as to answer a specific question; so globally through this

episode this question stands as a kind of virtual intention, always present in the back of my mind.

By analogy, as I study a flower bed I may direct attention now to one flower, now to another, but

in each case a given flower as noema is juxtaposed with the flower-bed as noema, a context

guiding my intending of each individual flower.

        This discussion shows, first, how an object can be a focus of attention indirectly, *through*

a different object, and also how a fact or question can be a noema, something I am mentally

engaged with. The subway map may be a momentary focal point, but, indirectly, a particular state of affairs is a primary focus of attention. Suppose, though, that I already knew when the G train terminates; then I would instinctively plan a different route, and act in accordance: as I get to the platform level, say, I turn to the track where the E train arrives, rather than the G track. Here there is no fact actively calling for my attention. Perhaps I look to see if a train is coming; then, a question does briefly fix my attention. I make an observation (there are no lights visible down the tunnel) which answers that question, and so that piece of information recedes back into subconsciousness, or at least into the collection of givens of which I am vaguely aware but which do not actively engage my thoughts[22]. Despite their passive givenness to me, though, they are still present in the sense that shape my actions: as I descend the steps to track level I instinctively turn toward the E rather than the G because I know that at this time of day the G will not arrive. By analogy, a vast web of beliefs are always implicit in all of my actions, usually experienced only passively: I know, for example, that to descend steps I need to walk in a special kind of way, but I never consciously plan out how I will place my feet as I do so[23]. Countless propositional contents are present, but in a passive way, inside practical activity. As pragmatic beings, then, we are epistemic beings: we exist in a world which is a *horizon* for us, a site of activity, precisely because the world is such that we *can* form beliefs about.

Recalling momentarily the analogy between rational agents and economic agents, note

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[22] Husserl would say I have "passive" awareness of them:

[23] Compare the case where I ford a stream by stepping on rocks, and have to plan which path to take.

that there cannot be economic agents if the world itself cannot be understood, or "framed", in

economic terms.   An interplanetary traveler shipwrecked on a distant planet cannot be an

economic being because there is nothing in the world around him which tolerates description in

economic terms: no objects to serve as commodities, no-one with whom to engage in

commercial exchange.   The world *ontologically* lacks the capacity to provide an economic

context around him.   When we say that we *are* economic agents, then, we are also saying that

the world *tolerates* description in economic terms: objects in our world can be included in

economic states of affairs, or can instantiate economic properties.   Taking a stance toward

ourselves as economic agents also involves attributing a specific ontology to the world.   An

"agentive" stance toward ourselves is accompanied by an ontological stance toward the world.

By "agentive" in the last paragraph I mean any act of taking ourselves as agents in any

sense: economic, rational, or otherwise.   Any agentive stance toward ourselves is also,

necessarily, an ontological stance toward the world: it locates a particular ontology in the world.

It proposes that there are objects in the world which link up in special ways, form special states

of affairs, and need a special vocabulary to describe.   It usually proposes that there are

higher-order objects which instantiate special kinds of properties.   It proposes that these

complex objects and systems can form a horizon for our thoughts and a site and focus for our

attention.   So, when we consider ourselves as *rational* agents, we are also attributing an

ontology to the world: we are taking the world as a horizon for our existence as creatures who

believe, act, plan.

Note than I am not taking a stance here on ontological questions such as the existence of

propositions or states of affairs: the question of in what sense states of affairs exist, say, is irrelevant here. The ontological stance I am describing concerns objects themselves. I see that a table is brown. The table-as-brown is therefore part of my horizon of myself as rational being—a rational or, better, an *empirical*, or *empirically ordered* horizon, an empirically ordered *world*. It is a vehicle through which I can exercise my rational nature. Note that this is true even if I am mistaken. Perhaps the table is red, but covered with a brown table-cloth. Even then, though, even when my beliefs are wrong, I am still plausibly exercising my capacities as believing-being. The table may not be brown, but it *could* be brown. It is part of the nature of the table to be characterizable as one color or another. It is part of the nature of worldly objects to involve themselves in states of affairs, such that beliefs *can* be formed about them. Corollary to our existence as rational agents, therefore, is the reality that facts obtain among things, enabling the world to *be* a horizon and site of rational activity and existence.

Our self-attribution as rational beings, however, has further ontological commitments attached to it. As I have emphasized, being a rational agent entails more than just the ability to formulate beliefs: it entails the ability for accumulations of beliefs to be passively present and implicit in our actions. Our rational agency is not simply a matter of first seeing that this is the case, then that, then the other thing, as if each of these facts existed in isolation. This agency depends on the reality that facts link up to form webs which permit contiguous activity, a particular goal, plan, or process unfolding over a period of time. It depends not only on the factical character of the environing world, but on the *kind* of facts which obtain. There are facts which pertain to systems, structures, networks within the world, offering more specific contexts

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for practical action.   The fact that the G terminates at Court Square is one fact within a system

of facts and things comprising, in this case, the New York subway system.   Our rational being,

in other words, is dependent on the existence of higher-order systems and structures in the world.

These are "higher-order" in the sense that they involve complex objects, ones which can from

different viewpoints be broken down into smaller parts, but which have a singular place within a

structure.   A train is a collection of cars, but the "structure" of the subway system, the one

depicted by a subway map, is a structure whose component parts are trains as a whole.

Individual trains are *singular* within this structure.   If the world did not evidence this tendency

toward different *levels of organization*—if it were not the case that things which are complex on

one level can be singular on another—then rational activity, insofar as it depends on and is

implicit within practical activity, would be impossible.   This, then, is a further ontological

stance toward the world which we take as we see ourselves in rational terms: we attribute to the

world a potential toward *complexity*, in a technical sense[24]; toward complex organization.

**Why bracket the Natural Attitude?**

Having discussed the natural attitude in terms of rational agency, and its concordant

ontological commitments, it is natural to ask the question of whether we should, or even *can*,

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[24]   In other words, according to formal criteria which can be developed for describing complex system,

such as the requirement that objects can be seen as both complex *and* simple (or "singular"), depending on which

"level" one is describing, or on how one is describing the object in question.

"bracket" this natural attitude.   Since it is obvious that we *are* rational beings, that our primary intercourse with the world is through practical action and empirical investigation, it is equally obvious that the world *is* (and therefore *can be*) a horizon for our rational being.   It is also obvious that this dimension of our being is central to our existence.   Why can we not, then, simply treat rational existence as *who we are*, and the rationalally ordered world, the world as empirical horizon, as simply *where we are*, as what the world *is*.   Perhaps this is the spirit behind "the world is everything that is the case", and, indeed, behind empiricism generally. Empiricism as *doctrine*—not just as a kind of analysis but as an attempt to define the bounds of philosophical analysis in general—is perhaps the doctrine that the human existent *is* a rational being, and the world *is* our empirical horizon, and these "is's" imply an ontological identity which make it mere confusion to discuss the human subject in non-epistemic terms, or the world in non-empirical terms.   To "bracket" the natural attitude is therefore to challenge this doctrine; to assert that we *can* and *should* take a stance from outside this attitude.

The first question which can then be raised is whether we *can* bracket the natural attitude. For my purposes, the natural attitude is the stance we take toward ourselves, and toward the world as our horizon, when we consider ourselves as rational beings.   To bracket this attitude, we must take some other stance, must see ourselves some other way: but is it not the case that whenever we take *any* stance, whenever we formulate an opinion on anything at all, we exercise our talents as rational agents, and so are still within the natural attitude?   In reply, I would certainly accept that philosophical analysis originates in the natural attitude.   To do philosophy, we employ cognitive structures whose main uses, and presumably whose evolutionary origins,

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are practical action.   But, I claim, although the cognitive process of formulating an opinion about the natural attitude itself may resemble the process of forming opinions *within* that attitude, this does not mean that all cognitive activity presupposes the natural attitude.   It is possible to use our cognitive abilities to speculate *about* the natural attitude and, as we do so, we become something *other than rational* agents.   It is hard to say what kind of agents we become, but Husserl describes the transcendental ego not as an object, but as a kind of being: in a sense, then, we become "transcendental" agents.   As transcendental agents, we are engaged in acts of making claims and assertions, judging evidence, asking question, etc., all of which are also part of our nature as rational agents.   These questions, claims, assertions, and questions, however, are of a transcendental nature, not an epistemic or empirical nature.   Phenomenology presupposes that not all such exercises of our minds are "rational" in the usual sense, and that we can reason about non-empirical matters, reason in ways which transcend questions of what is the case.

As evidence for this claim, phenomenologists can cite the fact that certain assumptions are implicit in all rational activity, and are *structurally necessary* to this activity.   All occasions of my forming or acting on beliefs, or at least beliefs about empirical matters (as distinct from mathematics and other abstract reasonings), involve sensory experience which is reinterpreted in epistemic terms.   The sensory and affective reality which surrounds me is converted into a repository of potential information, as a functional step in a process of acquiring knowledge. Alongside our rational agency, we can juxtapose our *affective* agents: we are affective beings in that we are subject to the affective influence of sensations and of kinaesthetic, corporeal

awareness.   As rational agents, we include this sensed world in our rational activity.   Our rational activity "circumscribes" or "claims" our experiential reality, making it a mere subset of its empirical horizon.   Yet there are occasions—in artistic creation, in meditation, in erotic acts—where our sensory and kinaesthetic experience becomes meaningful in non-epistemic terms.   Clearly, then, affective agency is not identical to rational agency, even if all sensations have some rational content: in affective agency, this content is present, but not *relevant*[25]. However, rational activity rests on sense-experience, so it depends on this experience itself having a structure that permit it to form the basis of a chain of reasoning and belief-formation. We cannot analyze this structure, however, by making any single observation; no empirical investigation can disclose the primordial spatio-temporal and kinaesthetic structures of sense-experience because these structure are implicit in *all* observation, and are not themselves observed.   By analogy, we cannot understand the workings of a camera by analyzing photographs.   The only way to describe the structure of sense-experience is to *reflect* on it, and insofar as we engage in this reflection we do seem to have left the natural attitude aside, and to be engaged in something other than rational activity.

So the fact that we can introspectively analyze the structures of experience in general

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[25]   If I enjoy the red on this canvas on purely aesthetic grounds, the fact that it conveys some information (such as, "this is red"), has no *importance*.   Conversely, if I examine something on epistemic grounds, the fact that I can learn, say, that something is red by *sensing* redness is unimportant: what is relevant is the fact I perceive, not the affective manner by which I achieve this perception.   Affective and epistemic reality are wedded together in my experience, but in epistemic activity one is ignored, and as affect agent the other is.

may demonstrate that bracketing the natural attitude is at least possible.   However, this still describes the "path out of" the natural attitude on terms which actually depend on the natural attitude.   It is asking: what makes rational activity possible?   But the phenomenon of asking what makes something possible is itself asking a kind of question which is typically empirical in nature.   It is applying rational activity to rational activity itself; and therefore not truly "escaping" rational activity.   Along similar lines, when I do logic, I may be engaged in non-empirical thinking and therefore operating as an agent of abstract reason, rather than a rational agent.   At the same time, however, I am engaged in this reason so as to clarify the procedures involved in my operating as rational agent.   I am concerned with *how* I formulate beliefs.   I am still operating under the assumption that beliefs, observations, justifications, and facts are the things of import; I am therefore working within the *concerns* of rational agency, even if not *within* rational agency itself.   So, too, if I describe the *critique* of the natural attitude in terms of an analysis of transcendental conditions *for* this attitude, I am working within the concerns of the natural attitude and simply repeating it at a higher level, a kind of "second-order" natural attitude, not truly bracketing it.

We come, then, to the question of *why* we should bracket the natural attitude, which is distinct from the question of whether we can do so.   I prepared for this question by emphasizing the ontological commitments which attached to our rational agency and therefore to the natural attitude.   I believe that we should bracket the natural attitude because we need to subject these ontological commitments to scrutiny, not because they may be wrong, but because we need to reconcile the picture of the world which naturally accompanies our rational natures with that

which comes from our reality as affective beings, and, for that matter, with that which comes

from one great result of our rational activity, namely, science.   To indicate why these "pictures"

need to be "reconciled", I will reiterate how we see the world, indeed what we see the world as

*being*, to the degree that we see the world as the site of our rational activity, the world *qua* this

site, when what we see the world as *being* is a projection of our rational natures.

**The natural attitude as "what we see the world as being"**

Within the natural attitude, we see the world as *empirically ordered*, and there are several

aspects to this picture of what the world *is* that can be emphasized.

- We see the world as a place where facts obtains: where objects are caught in nets of states of affairs which define their natures or the properties they instantiate, even if not their existence *per se*.

- We see the world possessing complex organization or higher-order properties: things which are obviously complex in purely physical terms, which are physically decomposable, have higher-order identities within systems where they may play a singular role.

- We see semi-independent, detachable structures within this higher-order reality, structures of interdependent higher-order identities and properties, which permit to us a field of operations both mental and practical: e.g., the subway system, a chess game, the "world" of chess (tournaments, grandmasters, and the like), a football pitch, and the "world" of football.

We see the world as *factical*, *complex*, *high-level*, and *multi-articulated*.

This picture of the world is different from one we would articulate if we reflect solely on

our affective capacities as sense-experiencing beings.   Suppose we call this later world the

"affective world" or "affective horizon" around us.   This is a world of affective presences within

consciousness, but experienced as determined by presences located in an external, and

surrounding, space and time.   It is a world whose *objects* are *presences*: a certain sensation of

red is present, now, in a certain corner of my visual field; a tactile sensation of a seat is presently

emanating from my legs and lower back.   A chain of sensations, some I explicitly notice and

others I acknowledge only implicitly or infrequently, form a spatially articulated tactile "picture"

of my body, and within those sensations, some are present among them which suggest pressure

against my back and legs.   So the sensation of the chair is *there*, and as I look at it, it seems the

chair is also *there* in space, in such a way that how I perceive the distribution of things in space

(using visual as well as tactile evidence) fits together with how I perceive my body's location

among those things, so that, for instance, when my body seems to touch the chair in space, I

sense a corresponding sensation with a spatial form that agrees with my picture of their locations.

What is at work here is a system of presences arranged in spatial patterns and coming into and

out of existence in time, continuous through time for the duration that they are present.   Some of

these presences take on further properties (a red sensation is red; a tactile sensation can be one of

heat or cold).   But these properties seem to inhere in the presences as properties within

substrates, as if the presences were "things" and properties like being-red were their ways of

existing.   As I sense this book as red, there is a different experiential source for this judgment

than when I acknowledge that it was authored by Sartre.   I do not mean that it is *factically* red,

that it so happens to be true of it that it is red[26].   I mean that redness is the modality through

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[26]   Suppose I know someone who places color-coded jackets around books: red for philosophy, blue for physics,

which a particular visual presentness *becomes* present to me.   Red is a property of a presentness, although it can also be "categorial" property of an object; by contrast, being authored by Sartre is always a categorial property, and is never the property of a *presence*.   These are some of the ontological "rules" of the affective world, of the world *qua* affective environment.

There are important contrast between the ontology of this environment and the ontology of the environing world of our rational agency.   Compare them on some points:

- As to the facticity of the empirical world (viz., the world of our rational being): objects are caught in nets of states of affairs.   In the affective world (the world of affective, sensory experience) there are relatively few states of affairs, although it can be the case that a sensation is red, or bitter.   The elements of the latter world do not tend to be described by large sets of states of affairs, which fix or determine their nature.   Instead, singular sense-properties inhere in them; they exist by *being* red or bitter.   Objects do not exist inside states of affairs so much as states of affairs, or at least properties, exist inside them.

- As to the complexity and higher-level organization of the empirical world, there is no equivalent in the affective world.   There are no higher-order sensations.   Several sensations can coexist, but a set of coexisting sensations is not in any sense one single sensation at some higher "level".   By contrast, a set of empirical objects (such as the cars of a train) is indeed one single object at a higher level.   The sensory field around us may be complex in having many pieces, but it does not exhibit *organizational* complexity; it does not meet the criteria of such complexity, such that objects can be both complex and simple depending on how they are viewed, or the criterion of functional autonomy between levels of organization.

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etc.   Then if I entered his room looking for a book on philosophy I would know it to be red, but the path I take to this knowledge does not involve a *phenomenal* or presentive redness.   To *sense* something as red is therefore different than to *know that it is the case* that it is red, because in the former there is present a red *sensation*, which need not be present in the latter case.   This sensation is a *something* whose existence is not accounted for in reductively calling "sensing something as red" as "coming to be informed of the fact of its redness".

These disanalogies do not imply that the two worlds are irreconcilable; after all, they are *the same* world, viewed in different ways. In addition, rational activity begins by mobilizing the experiences available to us precisely insofar as we *are* affective beings, mobilizing sensations into perceptions and then observations. But the above comparison shows that our picture of the world is incomplete if we are prejudiced into describing it only in terms which are derived from the nature and concerns of our rational agency.

Consider, now, the relationship between the empirical world and the world as described by modern science—or, more precisely, by contemporary physics. When doing so, it is useful to consider the kinds of activities typical of our careers as rational agents. What do rational agents do? We form beliefs, we make observations, and so forth, but there are certain *kinds* of beliefs or observations we typically make. Much of our rational activity is sortal or categorical: we fit things into systems of classification. We also have a tendency to describe things in relational or functional terms: we make judgments by familiarizing ourselves with functional patters inhering in complex systems. As we exercise our rational agency, we treat categories and functionality as givens of our environing world, as much a part of the furniture of nature as material objects or space and time. If we were to ask someone whose picture of what exists is shaped solely by their rational agency to describe the world, they would say that the world contains categories like trees, people, and buildings, just as much as it contains individual trees or individual material objects instantiating treeness. Such a person would take the existence of such categories as a primitive given, in no need of further explanation. They may accept that

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science needs to explain the physical processes which permit a tree to *be* a tree, but they would not opine that such an explanation amounts to a reductive theory of the *category* "tree".  Such a person would construe natural kinds as minimal elements of the logical structure of the world, not as abstractions or idealizations.  A person philosophizing solely from within the natural attitude would be a realist of a very strong sort with respect to natural kinds.

To contrast this attitude with that of the scientist, it is useful to consider the specific category of living things.  Consider, for a moment, the suggestion that the universe may have been "programmed" early on so as to permit the eventual formation of life[27].  If this were true, then the category "living thing" really would be a primordial element of the world, just as much as space, time, matter, and energy.  The category would have been "present" in some sense at the birth of the universe, even before it had any instances, because it would have exerted a causal influence on the early universe, shaping matter, energy, space, and time, such that it would eventually be instantiated.  This is a radically teleological picture of the world, to be sure, but teleology is entirely appropriate to our rational activity.  All teleological reasoning results from extrapolating our rational tendencies, appropriate to our biological environment, to the world at large[28].  The world around us has functional character; it has things whose behavior is explainable by their needs and how they meet those needs.  We know that the animal drinks water because it needs water to live.  Functional and teleological explanation is completely

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[27]  Sometimes called this   the anthropic cosmological principle.

[28]  Some writers have started to identify this as the cognitive origin of the notion of God.

appropriate for describing the biological world.   The difference between the modern scientific attitude and the attitude of our rational agency is that the former attitude assumes that this whole biological realm is an emergent order of a deeper physical reality, one in which functional and teleological organization reduces to wholly physical properties.   Functionality, for example, is a feature of the organization of complex systems: it is not a feature of the world *per se*.

The environment around us is complex, in the technical sense: we are surrounded by systems of objects possessing organizational complexity.   As rational agents acting in this environment, our minds are therefore attuned to the features characteristic of organizational complexity, such as functionality and teleology.   As rational agents, we assume, whether for convenience or as a dogmatic ontological position, that these features are features of the world itself, of existence.   In the natural attitude, we take the world to be a world of categories, functional relations, and higher-order logical structure.   In the scientific attitude, these are instead taken to be features of *organization*, as opposed to features of *existence*.   Therefore, even though science originates with, and usually operates within, the natural attitude, science in its own way brackets the natural attitude no less than phenomenology does (though not in the same way).   Science asks us to bracket, or place in abeyance, our tendency to view functionality and teleology as features of the world itself, and instead to consider them as features of complex organization, always subject to reductive explanation.   In addition, science proposes that there is a fundamental theory available to us describing the physical world itself, instead of describing the organizational patterns of systems within this world.   This theory, which at various times has been quantum mechanics, particle physics, and string theory, is neither functional nor

teleological.   It is presumed to stand as a reductive base with respect to higher-level theories.

Because this theory—quantum mechanics, for example—belongs to natural science, and because

it is based on empirical observation, I suspect most people would assume that it is therefore just

one empirical theory among others.   If this were the case, then bracketing the natural attitude

would also involve bracketing, say, our belief in quantum mechanics.   It would be incoherent to

say that quantum mechanics itself brackets the natural attitude.   In the next chapter, I will argue

that this picture is incorrect: that contemporary physics actually does bracket the natural attitude.

Modern physics does more than just install a reductive approach to higher-order theories

and develop a primordial theory to serve as a reductive base.   It also engages in speculations

which address what it means for something to be a theory and what it means for the world to be

describable via a scientific theory.   It asks what it *means* for there to *be* an empirical order or

logical structure to the world.   It tries to define fundamental philosophical concepts such as

observation or information.   It therefore stands in a transcendental relation to the natural attitude

and to our typical rational activity.   Observation and information, which structurally belong to

rational activity and therefore cannot themselves be analyzed through such activity, are not taken

as primitive, undefinable concepts.   They are defined and quantified.   They become part of the

*contents* and not only the *structure* of physical theory.   For example, Newton's theory of gravity

is shown to be incoherent because it suggests that information can be communicated

instantaneously[29].   As rational agents, we do not and, I maintain, we *cannot* engage such

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[29]    If the sun were to disappear, the Earth would (on Newton's theory) experience an instantaneous

change in its gravitational field, thus conveying information about the sun's disappearance to us, here on Earth,

speculations about phenomena like information and observation because such phenomena are a constitutive part of all rational activity.  It is only by suspending our rational nature that we can develop physical theories of information, its quantity, and its exchange, and of observation, which can be seen as a case of information-exchange (information traveling from one place, from the locale of the object which the information describes, to our own locale and our mind).

Because I will develop this proposal in more detail later on, for now I merely want to note that the view of the world appropriate to modern physics differs in important ways from the view of the world which derives organically from our normal rational activity.  As a result, there are three distinct world-pictures, three distinct "attitudes" I have discussed in this chapter: the natural attitude, which is based on our rational activity; the "affective attitude", which is based on our existence as sense-affective beings; and the *scientific* attitude, or the attitude of the contemporary physicist, which, I claim, is different from the natural attitude in important ways. What do we see the world as being when we are in the natural attitude?  What do we see the world as being when we attend solely to our affective experience?  What do we see the world as being through the lens of modern science?  Even though science is the product of the natural attitude, and even though rational activity is based on and mobilizes affective reality (viz., sense-experience), these three world-pictures are distinct.  They are not necessarily irreconcilable, but they have important differences which compel us to explain how they cohere into a unified whole.  And this explanation cannot be based in the natural attitude alone.  This, I feel, presents a powerful case that bracketing the natural attitude can and should be done.

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faster than the speed of light.

I now want to explore the relationship between these two attitudes besides the natural attitude: the contemporary-physics attitude and the sense-affective attitude.   Conventional wisdom suggests that they are more dissimilar to each other than are either to the natural attitude, because contemporary physics seeks an explanation of empirical reality at the deepest level, whereas the phenomenological analysis of sense-experience is about conscious qualia which are related only tangentially to the empirical world, and certainly seem to have little relation to quantum-mechanical objects like quarks or electrons.   While agreeing that they are topically quite different, I argue that there are interesting structural parallels between the world as viewed by physics and the world seen as an affective, phenomenal field surrounding our consciousness.

**The natural attitude and formal ontology.**

I will now offer an overview of Husserl's ontological theory.   This theory works on different levels, from the individual judgment or proposition to the life-world as a whole.   One the scale of the life-world, I think this theory resonates in distinct ways with both reductive and emergent science.   I will build up to this scale, however, by starting at smaller scales, retracing Husserl's own steps.   Although much of Husserl's work has ontological implications, there are several places where Husserl pursues ontology in a more formal manner, particularly in *Formal and Transcendental Logic* (Husserl 1969) and the second volume of *Ideas* (Husserl 1989).   For purposes of exposition, I will outline his idea of "formal ontology" in the former text and then apply it to the "regional ontology" in the latter.

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Husserl considers formal ontology as part of his general program for logic, one which analyzes the ontological content as well as the formal structure of propositions and judgments. The thumbnail version of this program is as follows: logic analyzes thought-processes in general, the informal ones of everyday life as well as the formal ones of mathematics and science. The canonical object of logical analysis is the judgment, which can be formal or informal. Judgments can be expressed in propositional form, which is why logic can direct most of its attention to propositions and their structure. Propositions can be written symbolically so as to make their structure apparent; in this case symbols stand for particular entities, properties, or relations which are involved in a judgment. Although logic can consider the structure of the proposition in the abstract, insofar as a judgment is actually entertained by a human subject while intending certain specific objects, the question of what these symbols mean—of what the objects of judgment actually are—becomes intrinsic to understanding the meaning of the proposition.

In order to focus on propositional structure alone, it is necessary to engage in a process of abstraction. If I think, say, "this book is red", I must abstract the identity of "this book" and "red" so as to explore propositional form, here: "$x$ is $y$". Mathematics, whose subject-matter is sets, relations, and operations in general, must generalize from concrete objects of thought so as to develop the notion of an "member of a set" in general, or a "minimal content" of thought. the foundation of mathematical thought is the ability to conceive of such a "bare particular". "The thing as strictly experienced gives the mere 'this', an empty X which becomes the bearer of mathematical determinations".[30] In the *Logic* he puts it as follows:

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[30] *Ideas I*, p. 129.

But when one considers the naturally broadest universality of the concepts set and number, and considers also the concepts element and unit which respectively determine their sense, one recognizes that the theory of sets and the theory of cardinal numbers relate to the empty universe, *any object whatever* or *anything whatever*, with a formal universality that, on principle, leaves out of consideration every material determination of objects; and, furthermore, that these disciplines are interested specifically in certain derivative formations of anything-whatever: one of them, namely the theory of sets, in sets as made up of any objects whatever that are taken together: and, similarly, the theory of cardinal numbers, in numbers as certain systematically generable differentiations of forms of sets.  Going on from there, one recognizes that, like the theory of sets and theory of cardinal numbers, the other *formal mathematical disciplines* are *formal* in the sense of having as fundamental concepts certain *derivative foundations of anything-whatever*.  This gives rise to the idea of an all-embracing science, a *formal mathematics in the fully comprehensive sense*, whose all-inclusive province is rigidly delimited as the sphere of the highest form-concept, any object whatever…, with all the derivative formations generable (and therefore conceivable) a priori in this field—formations that can always go on yielding new formations as products generated in a constructing that is always reiterable.  Besides set and cardinal number (finite and infinite), combination (in the mathematical sense of the word), relational complex, series, connection, and whole and part, are such derivatives.  As such, it is natural to view this whole mathematics as an *ontology* (an a priori theory of objects), though a *formal* one, relating to the pure modes of anything-whatever.  In so doing, one would also acquire the guiding idea for determining the separate provinces of this ontology—this mathematics of all objectivities as such—by a priori structural considerations[31].

For Husserl, actually finding this "most general content" is a task for phenomenology. As is pointed out by Suzanne Bachelard,[32] to have cardinal numbers we must have the act of counting, (1+1+1…), which requires the notion of one *something* with no further qualification, one "bare *x*"; to have set theory, we must have the idea of *something* as an element of a set.

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[31]    Husserl (1969), pp. 77-8.

[32]    Bachelard (1990), p. 32.

These "somethings" must have some ontological description, and it appears that for Husserl they

are derived from the most general characterization of our thought.   Any noema—any object of

intentional consciousness—has if nothing else the property of being *this*.   If we generalize from

any properties which different noemata have to their bare status as noemata, we can say that all

intentional consciousness involves the one-ness and this-ness of its focus, and by extracting this

specific aspect of the noema, consciousness can consider the "bare Something" which is the

basic unit of formal ontology.   If we attend solely to the thisness of the noema, and ignore

whatever other determinations it might have, our real-world experiences give us a template for

thinking at the level of mathematics or formal logic.   It should also be noted that in *this* sense

Husserl is an idealist, that is, he derives the most *general* or most *basic* unit of mathematics from

the mind, asserting that the mind *constitutes* these objects.   This is *only* true, for Husserl, for the

"bare Something" which is an ideal type particularized in numbers and other mathematical

entities.   For more specific types, Husserl does not believe that they are constituted by the mind;

he maintains that they are real (though "ideal", which is a translation of *irreal*) entities.


Propositional consciousness—acquaintance with the pertaining of states of affairs—is not
*atomistically* reducible to awareness of sense-qualia.   In other words, an awareness of a fact is
not a synthesis of an awareness of discrete sense-data.   Certain facts must already be
acknowledged for sense-data to be synthesized as they in fact are.   This does not imply,
however, that Husserl has no atomistic leanings.   Husserl's apophantics, for instance, concerns
how minimal (one might say "atomic") units of meaning combine to form larger meaningful
units, or "forms".   In the *Logic* Husserl does not explicitly declare whether his "forms" are
semantic or syntactic.   I think we can assume that he understands them as both.   The meaning
of an expression like *f(gx)* is a product of both the semantics of the symbols *f* and *g* and the

syntactic shape of the expression.   Syntactic forms applied to empty symbols have no meaning (viz., no semantic interpretation), but the forms themselves *do* have meaning insofar as they cause specific changes in the meaning of the terms to which they are applied.   If *f* is a binary function, for instance, the form *fxx* represents the unary function (call it *f'*) derived from *f* by restricting it to *x*=y.   Although the transformation *fxy→fxx* is purely syntactic, the transformation *f→f'* is semantic, because it has a specific meaning: a specific kind of restriction on *f*.   If we call *O* this restriction operator—which maps a function to its restriction to *x*=*y*—then *f'*=*Of* is a semantic relation, because *O* is a semantic operator.   At the same time, this semantic relation can be expressed via the purely syntactic expression *fxy→fxx*.   In other words, once the symbol '*f*' is fixed as representing a binary function, then the syntactic form *fxy→fxx* must represent a semantic operator (*O*) applied to *f*.   So syntactic forms have semantic interpretations, or express *concepts*, which vary depending on the interpretation given to their component symbols, but which do not lack for semantic meaning despite this variance.   The meaning of "*f(gx)*" is, or at least includes, "the composition of *f* and *g*, when they are both unary functions".   Each syntactic *form*, in Husserl's sense, therefore represents a *concept* or a *mental entity*, as well as a transformation applied to bare symbols.

We must stress, in other words, that for Husserl *apophantics* is an analysis of a specific class of mental objects or operations:

> Precisely here it is easy to be led astray by an inclination that arises from the supposed needs for greater exactness: namely the inclination to put in the place of the actual theory of multiplicities its symbolic analogue—that is, to define multiplicities in terms of the mere rules of the game.   [To define] a multiplicity we must not define merely...signs and calculational operations—for example: "It shall be allowed to manipulate the given signs in such a manner that the sign *b+a* can always be substituted for *a+b*".   Rather we must say: "There shall obtain among the *objects* belonging to the multiplicity (conceived at first as only empty Somethings, "Objects of thinking") a certain *combination-form* with the *law*-form

*a+b=b+a*….[33]


Husserl seems to be in a bind here, however, since we are inclined to say that if these symbols are "empty Somethings" then they have no intrinsic meaning, and so manipulation of these symbols *would* seem to be a mere "game".   The clue here is that while Husserl calls these "empty", he does not imply that they are contentless: they are not bare, uninterpreted symbols, but the most general possible form of a content of thought.   They are "empty" not because they are void, but because they are thought at such extreme generalization that no meaningful properties inhere in them.   They are still of the form of a "content of thought", however.   In other words, Husserl is applying the method of phenomenological generalization to the region of intentional contents, and derives from this generalization the most universal possible form of an object of thought.   It is *this* concept, an "Object of thinking" in the most general, which, for Husserl, is the true content of mathematics.


Husserl there believed that mathematics could rest on phenomenology, because phenomenology provided mathematics with the minimal concept of the "bare something".   As Bachelard points out, what is important is how Husserl joined ontology to mathematics:


> Let us consider one of the theories of formal mathematics, e.g., set theory.   A set **E** is regarded as given or defined when a property characteristic of its elements is stated, that is to say, a necessary and sufficient condition for an entity to be an element of **E**; then we have established the property of belonging $a \in \mathbf{E}$, which expresses that *a* is an element of **E** and is stated: "*a* belongs to **E**".   Hence we can say, as Husserl does, that the determining concept of set theory is the concept of *element*.   Now let us consider another discipline of formal mathematics: the theory of cardinal numbers.   This time the determining concept is that of a *unit*.   But when we think of element and of unit, in both cases we think of an entity of some sort, an object *in general*, without any concrete determination; and because we think of the

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[33]   Husserl (1969), p. 100.

object with this universality, we can set up a theory that is concerned only with formal relations. Reviewing the other formal mathematical theories, we see that each of them, in this manner, is concerned with the object in general, with "anything whatever", as Husserl says.[34]

It is important to contrast this notion of "anything whatever" to a view, common in mathematical logic, that the objects of mathematics are meaningless symbols, or that mathematics is a pure symbolic "game". A formal logical "language" specifies its syntactic rules with no concern with how its symbols are to be interpreted. A formal theory fixes the use of certain of these symbols, and specifies certain propositions in its language as axioms. If it is possible to interpret the symbols of the language by mapping them onto elements of a set, in such a way that the axioms remain true, then that set is a model of the theory. Thus, the symbols have no meaning until they are interpreted. However, the theory itself does not need to have a model provided for it: one can assert the probability of certain theorems, for instance, irrespective of their models; in general, the theory is not "about" any models at all, but about the set of all its possible models. Thus it is often said that the construction and analysis of theories is a purely syntactic enterprise, treating the elements of a theory as minimal and uninterpreted symbols. Husserl, however, seems to assert that the mind is only *capable* of thinking in terms of bare symbols by extracting the "thisness" from any more concrete intended object, and arriving at the most general element via a process of generalization. Bachelard's "units" or "elements" are intermediaries in this process. So the elements of logic are *pure noemata*, intentional foci whose properties are abstracted until we consider only their existence *as* focus. It is the mind's faculty of singling out a "this" which lies behind its ability to think of a "bare Something" as the root element of mathematical theories. Rather than arguing that the root elements of theories are meaningless symbols and leaving it at that, Husserl offers a detailed phenomenology of these root elements as constituted by the mind and as derived from intentional

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[34] Bachelard, p. 32.

activity in general.

**Ontological regions, both abstract and concrete.**

The generalizations which gives rise to the "bare something" of algebra and arithmetic are also evident in mathematical disciplines like topology and geometry, although here the abstraction does not go quite as far.   Geometry, for example, abstracts from our experience of space, but it yields mathematical objects which are still related to this experience: we visualize geometric theories in acts of spatial imagination, even if we have to imagine a counterintuitive shaped space (one which is curved, or four dimensional, or quantized).   Indeed, phenomenology explain how these nonstandard spaces can be cognitive objects in the first place, because it fills in the gap between the mathematical theory and the spaces which the theory described: we, thinking about the theory, can *imagine* these spaces, and so *grasp* the theory's meaning, which is something apart from its mathematical structure.   Husserl apparently believed that mathematical theories could be formally linked to mental or imaginary structures; for example, that one could give a mathematically unique description of space.   This was apparently inspired by David Hibert's idea of a mathematics which was systematically closed, the ideal which would be overturned by Gödel.   Husserl believed that particular formal types of objects could be uniquely characterized by theories which have them as models, which was proven technically incorrect by the Löwenhein-Skolem theorem[35].   For Bachelard, this result exposes a weakness in Husserl's research program.   For example, in geometry, one can distinguish between empirical space (the spatial structure of the real world), space as we perceive it (not *perceived* space, which is another

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[35]   Which proves that any first-order theory having an infinite model has a *countably* infinite model, so there is no way to demarcate regions we think of as necessarily continuous, such as space, or real numbers, by constructing a theory which has them as unique models.

matter, but space as we would analyze it mathematically when we rely solely on the understanding offered by perceived space—that is, 3-dimensional, Euclidean space), and space as that which models different systems of geometry:

> We are obliged to think on two different levels, for if we are to reach a higher level of formalization we must remember that this higher level is founded on lower levels.   However that may be, even when the "logical" interest backs up the technical interest, we remain within the properly *formal* sphere.   Even in his expression, Husserl can emphasize this notion of *form*.   When the mathematician speaks of a space of *n* dimensions, of Riemannian spaces, etc., he knows quite well that it is a question of space in an enlarged sense, of a "space".   But Husserl thinks that, instead of continuing to employ the term space in the usual sense, it would be neater to employ the expression *the categorial form of space*…[36].

Bachelard also mentions[37] the example of Abelian groups, where arithmetic properties once formalized are also are abstracted until they yield models nonisomorphic to numbers.   Because most theories have "counter-intuitive" models, the theory cannot be *formally* related, or formally restrict itself, to the set it was designed to study.   The question of what constitutes a "proper" interpretation of the theory cannot be settled by formal means alone. There is no way to stipulate that a theory is "about" space, for example, because at least some of its models will be quite different from space as we conceive it.   Yet even if this is a problem for formal logic, it is not really a problem for phenomenology.   What interests Husserl, despite his forays into technical logic, is how formal sciences evolve in interconnection with the life-world.

There are two different developments occurring here: first, the analysis of an empirical

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[36]   *ibid.*, p. 50.

[37]   *Ibid.*, p. 47.

phenomenon (such as space) can lead to theories which are of purely technical interest; second, the logical structure of some of these theories may be applied outside of the original context, and yet a connection to that context is preserved in how we cognize the relevant mathematics. So from the geometry of empirical space we proceed to specialized geometries to model kinds of space which might not be real, but which can be useful as tools (calculating distances on curved surfaces, for instance), and then to models of these geometries in sets which are wholly unrelated to empirical space (function spaces, for instance). Nonetheless a certain continuity persists among these phases of abstracting. The point is not that there is some ideal notion of "space" which lies behind each of these theories or models. It is not as if in each mental notion of *space*, mediated through a given theory, we are set in intentional contact with space as an *eidos* or *meaning*. The manner in which the various concepts of space here mentioned relate to each other is more subtle, and reflects the fact that our concept of space evolves as a result of mathematical insights into the geometry of different possible types of space. In other words, we are at the threshold of *genetic* phenomenology.[38]

Husserl wanted to use mathematics to formalize the idea of distinct abstract types or regions—"space" as a mathematical region, for example, or specific sets under specific mathematical theories. The mathematics thus employed, however, is itself derived from the real-world equivalents or foundations of these regions. So the empirical, concrete space of the life-world is formalized in a mathematical system which formally individuates this space—describes its existence in unique, mathematical terms (the problem which concerns Bachelard comes in with the "uniqueness" requirement here)—and then this mathematical theory

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[38] *Cf*. Husserl's *Crisis* (@), p. 25ff, which discusses the "mathematization" of space. No matter how much we can imaginatively transform our spatial experience of life-world objects, Husserl argues, it requires a conceptual leap to go from this spatiality to the formal space of geometry. This leap is made under a technological "ideal of perfection" (p. 25); once made, "we always have an open horizon of *conceivable* improvement to be pursued", which perhaps is a reference to the proliferation of modern geometries alongside classical, Euclidean geometry.

is translated back to our understanding of life-world space. Mathematically acquainted with the theory, we need to translate the formal structures theorized back onto the space we perceive around us, to *see* that space as bearing that structure[39].

This demonstrates in one formal case a pattern which reappears in Husserl's philosophy: we progress from the concrete to the abstract and back. Geometry, for example, beings with concrete, experienced space, progresses to mathematical formalization, and then the formal structure needs to be reconnected to concrete, "actual" space. Both of these transitions need special insights. The first step, how to take experienced reality and find avenues for formalization, requires the insights of a researcher; the second step, reconnecting the formal to the concrete, requires a more general insight in the imaginative superposition of formal structure on experienced reality. A similar cycle occurs in phenomenology itself: we progress from the natural attitude to phenomenological research, and back again.

Although Husserl's later work often emphasizes science and mathematics, he also observes, particularly in the *Crisis*, that our scientific beliefs inform our perception of everyday reality. Insofar as our science is technocratic—seeking to control nature by modeling it scientifically—then our society, also, relates to nature as something to be farmed, regulated, shaped according to human ends. So there is a link between Husserl's late theory of the

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[39]   This is perhaps an example of what Roger Penrose calls "insight": an *understanding* of a mathematical theory which goes beyond understanding its formal rules or proofs.   It is an understanding which relates the theory to the concrete world.   Penrose uses a similar concept of insight to argue that formal machines—machines whose "intelligence" is wholly modeled by Turing-compatible algorithms—lack certain qualities of the human mind (Penrose 1999, pp. 55, 143-146, 181).   In fact, *pacé* Bachelard, here we have a case where the Löwenheim-Skolem theorem actually furthers agenda behind Husserl's philosophy of mathematics:   given several incompatible models for geometry (or models for some other set—models of geometry being models of space as a set of points), *we* can detect models which "obviously" don't describe the original set which inspired the theory, but arguably a Turing-compatible robot could not.   See also below, pp. @.

"life-world" and his later theory of mathematics, insofar as science surreptitiously informs the values and perspectives embedded in the life-world, but also insofar as basic scientific or mathematical categories—space, for instance—are abstractions from categories of the life-world. However, there is another way that Husserl's analysis of propositional structure informs his analysis of the life-world.   This point is rather subtle, but note that Husserl's analysis of propositions does not proceed, as one might expect, toward an analysis of the simplest, most minimal propositions, out of which more complex ones can be built.   The constituent units of propositions, in other words, are not simpler propositions, at least not at the core.   Husserl does not seem to recognize, or at least to emphasize, minimal judgments such as "this book is red" or "I am holding up three fingers".   It might seem that there are some judgments which we make automatically and which cannot be broken into smaller pieces, such as, for example, "this book is red".   For Husserl, this judgment hides other judgments that are implicit as I individuate "this book" in the first place.

Although Husserl believes that we make many judgments automatically and subconsciously in perceiving the world, he also believes that these judgments come in groups, that there are entire networks of judgments latent in any moment of experience.   All of these judgments can potentially play a role in my singling out one individual object as a focus of attention.   Any single intentional act identifies certain properties in its target, and therefore contains an implicit judgment of the form "*S* is (as) *P*"; the structure of individual acts of judgment is therefore an intrinsic part of intentionality in general.   Judgment is part of the "machinery" of intentional consciousness, but Husserl's theory of judgment rests on his intentional theory as a whole, which is logically prior to it.   The result is that particular judgments are isolated from a latent network of judgments, just as particular objects are singled out from a network of objects which constitute our immediate environment.   The real question for Husserl is not how the mind formulates individual judgments, but how it creates a schema of its environment as a whole, how it constructs a model of the network of objects and properties which in their interconnections define environments and situations.   States of affairs exist only as "sutured" into such networks.   Husserl devotes attention to propositional structure, perhaps,

because he wants to analyze the structure of states of affairs—not of individual facts, but of environments and situations in their entirety, the structure of the mind's total picture of the momentary and the extended life-world. For Husserl, then, the logical analysis of single propositions is merely a provisional analysis yielding, in the *Crisis*, to a holistic theory of the life-world. The *Crisis* studies the life-world as a system or a network, structured by social convention, technology, language, and intersubjectivity in general. In our rational activity we are always situated in a life-world network, and in the natural attitude this network is taken for granted; but in order to study the transcendental *form* of this network we need to step outside the natural attitude, but we must also be able to reconnect our research to normal experience, experience for which the natural attitude and the life-world context is an unproblematic given.

When applied to the life-world, Husserl's distinction between *formal ontology* and *apophantics* yields a parallel distinction involving ontological regions. Recall that apophantics concerns propositional structure, and formal ontology concerns the nature of entities involved in propositions. On a large scale, apophantics is translated to the large-scale structure of the environing world: the sum total of all judgments which can be made about it, read in terms of their propositional structure. "Apopohantics" in this case—we might call it "macroapophantics" —concerns the lifeworld as a complex network[40]. Conversely, formal ontology on the scale of the life-world amounts to an exploration of the actual *nature* of the objects or substances which comprise the life-world. Husserl's philosophy of mathematics, in effect, tries to identify abstract "regions" which combine specific kinds of cognitive acts with specific idealizations: generalized space (yielding geometry and topology), generalized sets (yielding algebra), etc. The constitution of these regions is traced both by propositions which refer to their entities

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[40] This is not Husserl's terminology. A study of an environment as complex organized system amounts, in my opinion, to a generalization of Husserl's concept of apophantics up to the scale of the life-world. I am not aware that Husserl himself sees his concept of "apophantics" as useful at that large scale, though certainly his analysis does progress from the scale of the individual judgment up to that of the life-world as a whole.

(axioms of geometry, for example), and by the minds of mathematicians who *understand* these propositions ("understand" in the broad sense—see note 40, above).   To achieve this understanding we must approach the propositions in question from a point of view informed by ontological critique: we must ask about them what is the nature of the entities they describe. There is analogy, here, between the formal ontology of propositions and the "material ontology" of Husserl's ontological regions.   As we look out into the complex life-world, we need to ask not only how this world is structured, but also about what the various things in the life-world are. In place of abstract regions like mathematical space and sets, regional ontology considers types of the empirical world, regions such as material nature, biological nature, culture and cultural artifacts, and the realm of human consciousness.   In addition to the life-world as complex system, individual entities in this life world have their own *internal* complexity, which is reflected in the regions to which they are "assigned"[41].   The life-world reveals, then, two "forms" of complexity, a "horizontal" complexity involved in how different environmental objects are related, and a "vertical" complexity involved in how they are constituted. The ancestry of this distinction in the realm of the life-world, as I have argued, is the distinction between formal ontology and apophantics in the realm of single propositions.

This horizontal and vertical complexity, I believe, resonates with both complexity theory (for example, the life-world as complex system) and emergence theory ("vertical complexity" representing in effect different levels of organization).   Husserl's regional ontology is in effect a theory of emergence, in which high-level regions (such as the biological) emerge from low-level regions (such as the material), with the region of material nature as the lowest level.   Husserl also seems to consider this lowest level as ontologically special, as the ontological core of the levels which exist above it.   If *this* is true, then the analogy to emergence theory is rather weak, not that the analogy itself is weak but that the emergence theory consistent with Husserl would

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[41]   Objects may be "assigned" (understood as belonging) to different regions; for example, an animal exists in both material and biological nature.

be of the weak variety.   Husserl still accepts, it seems, the paradigm according to which material nature—the level of reality studied by physics—is the ontological base for all physical existence; and, if this true, it seems to suggest an ontological harmony between Husserl's phenomenology and physical reductionism.   I will explore this possibility further in the next two chapters.

## Chapter II

In this chapter, I will explore similarities between phenomenological reduction and the kind of reduction associated with physical theories. These are commonly seen to be unrelated. I certainly do not claim that a historical connection exists among them, as if reductive physics inspired Husserl to develop the theory of phenomenological reduction, or vice-versa. I also recognize that they come from different philosophical milieus, although we should remember that Husserl began as a scientist and mathematician and one of his main goals for phenomenology was to ground the natural sciences. Whatever his background, embarking on his phenomenological project linked Husserl to the philosophical culture of Brentano, Kant, and their contemporaries, and thus was quite different from the intellectual culture which gave birth to the reductionist project in modern science. Despite such evidence to the contrary, however, I will argue that these cultures have more in common than one might think.

Before turning to phenomenological reduction, I will briefly describe and discuss physical reduction. I do this not because I believe the philosophical literature needs yet another summary of reductionism as a method or a program, but because the particular ways that I understand reduction may shed light on the parallels I will draw between phenomenological and physical reduction.

**Physical reduction defined.**

It is useful to distinguish several types or aspects of physical reduction. Reduction can occur between theories, between properties, and between sets of objects and their members, although these can overlap. A theory-to-theory reduction occurs when a scientific theory (*T1*) is posited as being one part

of, or replaceable by, some other theory (*T2*).   Here *T2* can be assumed to be more complete or successful than *T1*, usually in that *T2* provides an explanation for principles which are simply assumed in *T1*, or can apply *T1*'s ideas, sometimes with refinements, in places where *T1* fails.   A classic example is Einstein's theory of gravitation compared to Newton's[42].   Relativity can explain (with calculations involving the curvature of space) why the inverse-square law of gravitational attraction holds, whereas this is a mere axiom for Newton.   In addition, relativity can give correct results at scales where Newton's will not.   For *T2* to be "deeper" than *T1*, however, it is also generally required that *T2* contain details which, if ignored, causes *T2*'s equations or predictions to resemble or replicate *T1*'s.   In this case *T1* is a subset of or is embedded within *T2*: relativity mimics Newtonian theory among objects of (for us) "normal" size and velocity.   *T1* terms and objects can, with varying degrees of formality, be mapped onto *T2* equivalents.

Theory-to-theory reduction is often accompanied by other kinds of reduction, but it is not equivalent to them.   The embedding of *T1* in *T2* often yields an explanation, not only of *T1* as a theory, but of the *T1*-objects and *T1*-terms, which become translated into *T2*.   For example, Newton proposed gravitational attraction as an entity, an object in his theory.   He left it substantially undefined, however; a conceptual primitive.   With Einstein, gravitational attraction is "mapped" onto a different concept, namely a tendency of mass to bend the space around it.   This perhaps still gives us an entity whose existence is not explained by the theory, but it shows certain improvements.   Instead of a mysterious attractive force between objects separated in space, there is now interaction between an object and the space immediately surrounding it.   This force travels through space like waves[43], so it does not act at a

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[42]    *Cf*. Lisa Randall (2005), p. 109.

[43]    Paul T. Steinbock and Neil Turok (2007), p. 201.

distance, at least not directly.   In short, it makes the gravitational force resemble other forces of nature, such as electromagnetism, making it less mysterious.   It integrates gravity more effectively into other physical theories[44].   It is more successful at explanation, as well as at predication.

The distinction between Eistein and Newton also demonstrates a separate reductive pattern: causal reduction.   A phenomenon (the tendency of objects to move toward one another, and for light objects to make this movement toward heavy ones and not vice-versa), is theorized as caused by a different phenomena, namely the large object curving space so as to alter the small one's motion.   The original phenomenon is not assumed to be illusory; it is not eliminated.   It is merely shown to be caused by a different phenomenon (or the same phenomenon under a different description), and this other phenomenon or description has an informative explanation which the original phenomenon, on its own terms, lacks.   Of course, there are cases where causal explanation does eliminate entities (see phlogiston), but even there a new theory has to explain the illusion of these entities' existing: what we perceive as the burning of a substance in space is actually the light generated by the heat of the fire.   Darwin's theory of evolution eliminates the presence of an object (namely a Designer of nature) but proposes in its place a general tendency or process (Natural Selection).   Theories can differ from one another not only in terms of their predictions, and in terms of the data they recognize—in other words, not only in their empirical content—but also in terms of their ontological commitments.

Consider the theory of dark matter and dark energy.   This theory evolved in response to unexplained data concerning the observed expansion rate of the universe, as well as the movement of

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[44]   *Cf*. John D. Barrow (2007), p. 105.

certain galaxies[45].   In the case of dark matter, some hitherto-undetected source of mass must be assumed

for the galaxies' movements to make sense—or, at least, this is one way to explain the data.   An

alternative would be to hope that the data is wrong, and try to improve it.   Another alternative would be

to propose that gravity acts differently at the vast scales encompassed by clusters of galaxies.   Most

physicists[46] believe that proposing the existence of dark matter is less drastic than revising the canonical

theory of gravitation.   The new theory has then taken on new ontological commitments: it proposes that

*there is* dark matter.   Note that someone who favored an alternative, such as revising the equations for

gravity, might still accept dark matter as a "useful fiction".   Suppose a physicist develops a new equation

for gravitational attraction at very large distances.   This equation might be mathematically equivalent to

the equation one would derive if one took the standard inverse-square law, but assumed that there was

some additional mass in the space between two objects, increasing the force pulling on both objects in the

directions toward each other.   We could use this "fictional" matter as a mathematical device, without

proposing that it is actually "there", stipulating that any calculation performed with the old equations (and

using the fictional matter) could be done as well with the new equations (the fictional matter being

eliminated).   This would be analogous to how in calculus one can use a quantity like $\Delta x$ as a number,

knowing full well that it is not "really" a number and that any calculation could be done instead, more

complexly, using $\varepsilon$-$\delta$ algebra[47].   For another example, a biologist may refer to natural selection

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[45]    Barrow, 128-133; Steinhardt and Turok, 43-4.

[46]    Though I have read of a few exceptions.

[47]    In which I try to prove that a curve approaches a certain limit, for example, by playing an imaginary game with

a rival who doubts that my proposed approximations are inadequate.    I need to show that no matter how exact

he wants my approximation to be, I have a rule to create an approximation satisfying his requirements.

"designing" an anatomical feature for a certain purpose, while knowing full well that there is in Darwinian theory no agency or conscious force "designing" anatomy. Any sentence seeming to imply the existence of such an agency can be rephrased to eliminate this illusory existent.

Such "eliminative" reductions, however, are rare. In most cases, reduction of a *T1* to a *T2* sees *T2* taking on new ontological terms and concepts, such that *T1*'s objects are seen to be ontologically determined by, or ontologically reduced to, *T2*'s. Chemistry assumes that objects are composed of molecules; it therefore introduces molecules as a new kind of existent, as a new ontological commitment. It also asserts that object are *made of* and *constituted by* molecules. This is not a stance taken on objects' behavior or properties; it is a stance on *what they are*, not on *what they do*. This stance does intend to *explain* their properties and behavior. It is an explanatory reduction, but the work of explaining is done by *ontologically* reducing objects to molecules. Whereas *eliminative* reduction is the canceling of an ontological commitment, freeing science from having to entertain the existence of something mysterious (phlogiston, a natural designer, etc.), ontological or "compositional" reduction of this kind takes on a *new* ontological commitment. This needs to be emphasized, because the reductive hierarchy of modern science (objects down to molecules, then atoms, then electrons and quarks, and finally strings or membranes) is one of increasing ontological commitments, not one of ontological elimination. The ideas is not that macroscopic objects do not exist; instead, their existence, how they take on their properties, is less mysterious by making the further assumption that molecules exist, and compose these objects; and so one down the line. Ontological mystery is transferred from one level in the hierarchy to another: once we say that objects of type **T1** are composed of objects of type **T2**, there is no mystery attached to **T1**-objects not also attached to **T2**-objects. The only truly "mysterious" existents are those of the deepest reductive level, the entities of which everything else is composed. The "deep question" for physics is why *these* entities exist and why they have their particular properties. As we proceed toward

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answers to this question, all other ontological mysteries about higher-level objects also get answered.

So the reductive "project" is one where ontological mystery gets sequestered into one specific "deepest" realm of matter. This only works if we assume that when **T1**-objects are composed of **T2**-objects, the tendency of **T1**-objects to take on particular properties is explainable in terms of the tendency of **T2**-objects to take on their own properties. When we say that something is red, what we *mean* is that its molecules tend to reflect red light. This is not only an explanation of *why* it is red. It is an explanation for the meaning of the "is" in an expression like "this is red". What it means for complex object to instantiate a property is to be explained on the basis of how its simpler parts instantiate *their* properties. The hope is that there will be a primordial type of object, a **TΩ**, with a relatively small set of properties which can be meaningfully attributed to it. Without this stipulated property-reduction, the mere fact that objects of one level are composed of objects on a different level be unimportant. We would still have to explain not only why, but what it *means*, for **T1**-objects to instantiate **T1**-properties. Given ontological reduction, we claim that when **T1**-objects are composed of **T2**-objects, then "instantiation" in the sense of **T1**-objects instantiating **T1**-properties simply *is* **T2**-objects instantiating **T2**-properties. Physical reduction in its deepest, most complete sense, is the combination of ontological reduction *with* property reduction. Reductive physics is committed to the existence of a primordial type of objects which ground the entire system of physical nature, not only in the sense that complex objects are composed of them, but because the properties available to these primordial objects form the basis for properties attributable to more complex objects.

**The search for a physical "ground zero" theory.**

I will refer to such a theory of the most fundamental possible objects and properties as a "ground zero" theory. It is instructive to see compare some of the various theories which have tried to play this

role in recent times.   For example, the "standard model" of particle physics could be a reductive base for physical science because it explained in detail the properties of the constituent units of atoms, from with the properties of molecules and larger objects follow.   The standard model identifies different types of fundamental particles (electrons, quarks, bosons, etc.), and how they interact.   It therefore succeeds as a theory of the most primitive possible forms of matter and energy—on the assumption that these particles cannot be further divided.

The standard model, however, is notoriously "inelegant".   It contains a complex network of fundamental particle-types divided into families and "generations"[48].   It has no means (or at least had not managed) to explain why these particle types and families, and not others, existed in the universe.   It identified a set of core properties which particles took on (mass, charge, spin, etc.), but did not adequately explain what these properties actually *were*.   The fact that these were perceived as *failings* itself tells us something about what physicists expect their theories to do[49].

If reduction were paradigmatically theory-to-theory reduction, then the standard model would be a very successful theory.   It supplies a base for other theories, it explains a tremendous amount of data, and makes predictions with great accuracy.   It succeeds on all empirical grounds.   It is therefore an excellent empirical theory, a theory meeting empirically-oriented criteria.   Even though the model leaves some things unexplained (e.g., why the fundamental particles group into the families which they do), it might be argued that any physical theory whatsoever will leave some things unexplained.   Any theory will have some empirical foundation which is not itself further explainable, because they are just the way

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[48]   *Cf*. Lisa Randall, p. 160; Brian Greene (2003), pp. 7-13, and (2004), pp. 294-301.

[49]   Greene (2003), p. 142.

the world is.   Some truths or laws may be unexplainable in terms of anything else, but may simple be

minimal units of the empirical structure of the world, minimal givens of *how the world is*.   This

possibility amounts to saying that natural science by necessity reaches a limit to its explanatory powers,

and that there is a primordial empirical structure to the world which can be merely noted or observed.

Scientific explanation is the explanation of other facts *via* that empirical kernel, not an explanation of the

kernel itself.   This, note, is an ontological stance: the idea that there is within the world such an

"empirical kernel", such a "raw empiricity" or raw empirical given of which we can say nothing but that

"the world is like *this*".   It may be a claim which *empiricism* implicitly makes or feels comfortable

making, but it is in effect a metaphysical stance and therefore not itself empirically verifiable.

The dissatisfaction which physics felt toward the standard model, however, shows that physicists

are not content with this kind of empiricist metaphysics.   They sought to push deeper, not because other

theories could be empirically better, but because the empirical structure revealed by this model itself

needed to become an object of explanation.   Physics seeks not to name the way the world is, but to

explain why it is that way.   As a result, the standard model evolved into string theory, according to which

fundamental particles are not point-like objects but multi-dimensioned manifolds of matter and energy.

These strings are presumed to "vibrate" in a multi-dimensional space (current theory recognizes 10 spatial

dimensions, as well as time), seven of whose dimensions are too small to be visible or experienceable on

our scale[50].   These extra dimensions are small because they are curved inward, akin to how the

two-dimensional surface of a straw bends over onto itself and therefore encloses a smaller dimension than

the uncurved length of the straw[51].   The shape of these curved dimensions, as well as mathematical limits

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[50]    *Cf*. F David Peat (1988), p. 151; Greene (2003), pp. 143-148.

[51]    The straw analogy is due to Randall, 35.    A dimension which is curved or folded into a small size is said to be

on any vibration[52], limit which vibrational patterns are physically possible. From a purely geometrical description of the string and its local spatial environment, we can mathematically calculate its set of permissible vibrations. String theory then makes the further assumption that for any string-particle, properties such as its spin, charge, and mass are due to how it vibrates. To instantiate a property such as *having spin ½* is therefore to vibrate in a particular pattern. In place of different kinds of particles, each with their own properties, there is simply one kind of energy and matter, and a string becomes an electron, a quark, a boson, or any other kind of basic particle by vibrating in a particular way[53]. According to calculations done so far on at least some particles and properties, "possible resonant patterns of vibration…yield exactly the observed properties of the matter and force particles"[54].

Compared to the standard model, our ontological commitments to *distinct kinds* of matter or energy are now eliminated; the only commitments which remain are commitments to a general notion of matter/energy, a generic "thisness" inside space and time, as well as to space and time itself. Point-particles become strings; properties like spin and charge become properties of vibration itself; different kinds of particles become different kinds of possible vibrational patterns. The carefully

"compactified" (Peat, 113).

[52]   Randall, 284. When something vibrates, the wavelength of this vibration must be an integral factor of its own wavelength: along its surface, there could be one wave, two waves, etc., but not any fractional quantity of waves. This is why the sound of a vibrating string can be musical: we hear the resonant patterns of only a few musical pitches, rather than a dissonant jumble of notes we would here if fractional wave patterns were possible.

[53]   Peat, 202.

[54]   Greene (2003), p. 143.

observed laws of interaction between particles acquire sophisticated topological explanations, by imagining strings which physically encounter one another, merge, and/or split[55]. Physicists in the standard model were like zoologists, classifying the kinds of particles present in the particle "zoo", observing their interactions, and formulating general laws, but never really explaining why these particular interactions and families occur. With string theory, physicists can progress from being data-collectors to being explainers.

The importance of this goes beyond merely theoretical elegance. The standard model leaves unexplained the fact that particles came in different kinds and families, that they could be classified. There was not just matter; there was matter of different kinds. An electron was a particular *kind* of matter; the difference between an electron and a quark was somehow inside their matter itself. Chemistry had succeeded in reducing away the different kings of substances: water is different than oil not because water-matter is different in kind than oil-matter, but because they have different ways of being composed of simpler parts. Particle physics, though, seemed to have reached the limit of such category-elimination. There seemed to exist a primordial set of natural kinds which were just as fundamental to existence and space, time, matter, and energy itself. Even if no matter were present, the sortal distinction between matter as electron, as quark, etc., permeated the universe and was interwoven with being itself. It therefore had the status of a kind of metaphysical *a posteriori*, an empirical structure equiprimordial with physical existence itself. This seems to contradict a peculiarly modern philosophical attitude which could be summarized as "existence precedes essence": that *how something is* is never as ontologically fundamental as the thing itself. No empirical determination, no alternative of how things can be, lies on the same ontological plane as things as such. And yet here we have an empirical reality, a

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[55]    Peat, 120-123, 140-145; John Gribbin (1995), p. 234; Greene (2003), pp. 158-165.

collection of ways of being, which seems just as fundamental as space, time, matter, and energy themselves. The universe seems to be, even at its most primordial, something more than just a gigantic "this": it seems to have an inner language, an inner articulation or differentiation, which is part of being itself. *To be* is no longer, at root, to be a *this*, to be self-identical. The existence of a primordial empirical structure seemed to complicate all self-identity, all identifications of the form *A=A*, during the reign of the Standard Model.

To see this, imagine for a moment a single electron in space, and let us assume that there is no other particle, energy field, or physical phenomenon whatsoever which could affect it. No other physical existent or information is present around it. Yet if "electron-ness" is an unexplained or unreduced empirical primitive, there is still something else present here: the electron's very electron-ness, the *category* electron is present *through* the electron's electron-ness. To show why this poses a physical problem, I will discuss *natural kinds* in the context of modern information theory. For purposes of discussion, by "natural kinds" I will mean only categories which seem to have primordial existence one the same level of matter, energy, space, and time themselves. Natural kinds like rocks or animals can be ontologically reduced, in the sense that the similarities which permit two different things to be examples of one single kind can be explained in terms of how they are organized. To be an animal, say, is to be organized in a certain way: "animal" names a principle of organization, not a kind of substance. It is assumed, however, that particles like electrons are not complex; therefore, to assert that they take on different kinds is to assert that these kinds simply *exist*, and do not permit reductive explanations in terms of organization and complexity. A *natural* kind, in this sense, is an irreducible part of being itself.

Suppose, then, that there were several different possible kinds of matter. The existence of these distinct kinds would certainly seem to be information about the universe, and would therefore be

information as such, subject to information-theoretic laws and restrictions. As discussed by Seth Lloyd[56], particles carry information by taking on properties. A photon's spin, for example, is one bit of information which the photon "carries". All information must have a "carrier" of some kind. Any time there is a bit of information, there must be matter or energy somewhere to carry it. Lloyd puts it as information being physical; we could also say that information is energetic: the existence of a piece of information costs energy[57]. Contemporary physics sees a close link between information and energy, and physical problems (for example, what happens on the event-horizon of a black hole[58]) can be tacked by considering the physical world as a place where information must be stored, transmitted, and buttressed with adequate energy. Information is "negative entropy", a resistance to the tendency of physical systems to lose their structure, to dissolve into randomness[59]. It requires energy to resist this dissolution. Any structure in a physical system, then, requires energy to sustain itself; if the physical world lost all of its energy, it would also lose all of its structure.

The problem with natural kinds should now be obvious. The existence of these kinds would seem to continue independently of whether they were in fact instantiated. This is precisely what it means to say that they are equiprimordial with matter and energy. They do not depend on energy to exist; they are features of existence and would have virtual givenness in existence even were all physical energy to dissipate. A system of primordial natural kinds would set an upper limit to the universe's entropy

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[56]    (2007), pp. 110-111.

[57]    *ibid*., 65.

[58]    Greene (2003), p. 343.

[59]    Lloyd, 41.

(randomness).   Such a system would oppose the universal tendency toward disorder.   It would be order "for free", that is, order which does not spend (require) energy.

The "empiricist" notion of fundamental empirical structure where scientific explanation must stop, then, actually contradicts one of science's fundamental modern assumptions, namely, that the universe "naturally" evolves toward greater entropy.   Were no energy present, the eventual state of the universe would be one of unchecked entropy, and therefore neither order nor information.   Far from a fundamental empirical structuration, this would be a world where the very notion of the "empirical" would be impossible.   Therefore—if this relation between order, information, and energy is true—empirical order only comes into the universe as energy comes into being in the universe, and the order is in effect the order *of* this energy, the properties it takes on.   Here, though, the energy is ontologically prior to its properties, and therefore to empirical order itself[60].

Consider again, then, the case of the lonely electron: if "electron-ness" were in fact a natural kind, then the existence of this kind would be information that would exist alongside the individual electron. There would be a piece of information (the existence of electron-ness as kind) in this particular physical

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[60]   A natural question at this point would be: "what about mathematics"?   Don't mathematical truths exist in a vacuum, or present a structure which will never be dissolved by rising entropy?   One answer might be that mathematics are non-empirical, and information theory even gives us a demonstration *that* they are non-empirical: namely, that mathematical truths can exist without there being energy to sustain them. Alternatively, though, I like a phrase due to John Barrow (p. 12): "It is simplest to think of mathematics simply as the catalogue of all possible patterns".   Mathematics, in other words, analyzes patterns of organization.   In this dissertation text, "organization" always implies "higher-order", so mathematics becomes in effect one kind of higher-order theory, one tool in the arsenal for analyzing complex patterns, a supplement to   emergence theory.

system (one with one sole electron) which it would be unable to support if the relation between information and energy, as presumed by modern physics, were correct.   When we talk about *A=A* or about an electron being both *itself* and also an exemplar of electron-ness, we are informally rehearsing problems about the quantity of information embodied in the existence of any particular thing[61].

This discussion of information theory is intended to show one of the under-appreciated merits of string theory compared to the standard model: eliminates information-theoretic paradoxes which come from an unexplained store of empirical structure, including a nonreducible set of natural kinds[62].   There is only one fundamental type, namely matter and energy as such; its properties (including whether it is matter *or* energy) is determined by its specific pattern of vibration.   As a reductive base for physical theories in general, string theory differs from the standard model   because it takes on a further project than offering a universal ground of empirical explanation.   String theory offers a reduced *ontology*, a derivation of all physical reality from the mere concept of spatio-temporal existence.   String theory says nothing about strings themselves other than that they are presences extended in space and time.   The "stuff" of a string is simply physicality as-such, the most general possible concept we could have of a something occupying space-time.   All further determinations, all further transitions of the general "physicality as such" to particular physical properties, is made mathematically; the physical-as-such, vibrating, takes on the form here of an electron, here of a photon, etc.

We could adapt the philosophical term "haecceity", or "thisness", so as to be able to express what strings *are*.   Strings have no internal properties other than there being *this particular* physical extension;

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[61]   A quantity which is physically calculable (Lloyd, 186-196, particularly p. 191).

[62]   Which is what the Standard Model's particle families were, philosophically speaking.

all other properties are ones they take on over time[63].   So string theory is rooted in a primordial haecceity or material "thisness", and as a reductive base for other science string theory reduces all physical existence to haecceity.   It therefore pushes reduction ontologically further than does the standard model. This is especially true in the period after 1995, when the competing versions of string theory which had coexisted until then were shown to be all variants of a single, underlying theory[64].   String theory itself evolved into "M"-theory[65], where strings are seen as multi-dimensional membranes rather than one-dimensional strings (although the term "string theory" is still used to designate this contemporary version).   In discussing reductionism as a program for physics, it is worth noting that physics did not truly have a theory which offered a plausible base for *ontological* reduction until just over a decade ago. The science is still too new for its ideas to have the effect which they deserve on the philosophical community.

**The physicist's world-view and phenomenological ontology.**

As I suggested in the first chapter, we should contrast the world-views assumed by the natural attitude, by modern physics, and by phenomenology.   I noted that the empiricist world-view of the

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[63]   Here I ignore properties such as being at a particular location in space, which are relational properties between a string and other strings, or perhaps and space-time itself.    Strings have no *nonrelational* properties beyond their haecceity.

[64]   A unification attributed largely to Edward Witten, and presented in a famous lecture which launched the "second string revolution".    *Cf*. Randall, 313.    The unification was achieved by adding one more dimension to the picture assumed before, yielding 11 dimensions in total, or 10 spatial dimensions, rather than 9.

[65]   Steinhardt and Turok, 134.

natural attitude was not necessarily the same as the view of physics, and I think I am in better position

now to defend that claim.   These two views different on how they conceive information and its

associated concepts.   For the empiricist, information is simply a given, a feature of the environing world

in which we, as empirically-minded agents, engage in rational activity.   Information content surrounds us

and is embedded in the surrounding world.   The world *has* a structure which we, in an exercise of

rational powers, try to discover.   This vision of information as just "there" takes no considering of

information as quantifiable and, ultimately, physical.   The physics world-view is one where information,

and empirical order, only exists because there is energy to sustain it.   Information depends on matter to

embody and carry it.   Information is not just an empirical concept, related to facts and states of affairs.

It is also a physical concept, related to matter and energy.   This difference proves to have major

repercussions.

To begin with, certain kinds of arguments which seem natural and even elegant as we think in

ways derived from the natural attitude become suspect under this new view of information.   Our

intuitions of what is possible and impossible, which derive from our rational activity, may need revision.

It seems possible that I am a brain in a vat, with a computer feeding me mental states.   This is a plausible

picture of what my environment is like: it is logically possible that the empirical order I perceive is caused

or generated in such way.   It may *not* be possible, however, on information-theoretic terms.   How much

information would be needed to create all of my mental states?   How much energy would be consumed

in the computations necessary to give these states proper form?   Aside from logical and metaphysical

possibility, there is a new kind of possibility we need to consider, or a new variation of physical

possibility: computational or information-theoretic possibility[66].   Is a particular metaphysical story

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[66]   There exist physical limits to computation (Lloyd 157), which would render some "metaphysically" possible

worlds impossible so long as modern information theory is largely correct.    This is not a mere "physical"

possible once we start quantifying the information which the story is committed to?   Given a possible

world, which has informational content different from the actual world in a some specific way (which is

why it is *not* the actual world), where does its information come from?   Where does the energy needed to

sustain this information come from, in that world?   Are there possible world where information is *not*

physical, or is not linked to energy and entropy?   These are metaphysical questions which physics has

thrust upon philosophy.   They are questions which are difficult to answer, though, from within the

natural attitude, because it is "unnatural" for us to think of information in physical or quantitative terms.

We naturally perceive information as simply given, and not in need to energy to be sustained.   In order to

answer the above question, then, we need to "bracket" our sense of the environing world as an empirical

horizon whole empirical order or structure is simply there, features of reality as such.

By pushing reduction to its ontological limits, physics also, in its own way, suspends the natural

attitude.   It asks us to bracket our belief in the laws and empirical features of nature so as to subject

empiricity itself to an information-theoretic critique.   How much information is present in a given

empirical order (i.e., in the fact that a particular empirical domain has the particular order which it does),

and what matter or energy sustains and carries this information?   Within the natural attitude, the human

subject is viewed as a rational being, attuned to the empirical order of the environing world.   Knowledge

is a relation between the subject and empirical structure, and we are able to acquire knowledge because

we have faculties which open ourselves onto this empirical structure, like a patio door which opens onto a

mountain vista.   If there were a primordial empirical structure underlying all others, such as the

"unreduced" standard model, then knowledge would reach its pinnacle to the degree that we, as subjects,

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impossibility, say, along the lines of it being impossible for me to lift 1000 pounds.    I consider this a new kind of

impossibility which we can visualize as midway between the metaphysical and the merely physical.

could be attuned to this order.   As the human community performs the experiments, discussions, and analyses which explore this deepest empirical order, we orient our collective minds and collective understanding to the world's empirical structure at its deepest levels.   This structure is the ultimate content of our reason, what we are reasoning about.   Through science, our minds enter into intentional relations with this empirical kernel.

As we move past the standard model, however, the picture changes.   Although our minds may be oriented toward a core empirical structure, this structure itself depends on matter and energy to be sustained.   So although it may be true in a sense that we are attuned to the rational ordering of the world, this rests on a more primordial attunement toward its matter and energy.   We are capable of knowledge not, ultimately, because our minds can be set in relation to the world's empirical structure, but because we are subject to the energies of the universe, because we are affected and seized by them.   We are gripped by pain, light, heat, and sensation generally.   The forces of nature exercise their power over us, and sensation and consciousness is the record of this interaction.   Consciousness is embedded in the ebb and flow of energy within the universe, the means by which information is communicated from place to place: this is how information can travel from external states of affairs into our minds[67].   This attunement, this opening of consciousness to the matter and energy of the world, is the ultimate foundation for knowledge. A discussion of knowledge, either its process or its condition of possibility, must begin here.   This is why works like *Ideas* and *Experience and Judgment*, where epistemology is a major concern, start by analyzing "The General Structures of Receptivity"[68] or "The Region of Pure Consciousness"[69].

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[67]   Gribbin evocatively describes consciousness as, in effect, experience of electromagnetism.

[68]   *Experience and Judgment*, Part I, Chapter 1 (p. 72).

**Husserl: Epistemology rooted in phenomenological ontology**

For Husserl, human reason begins with "pure receptivity" or "raw awareness"[70]. Note, however, that both of these terms suffer from a semantic ambiguity which also affects words like "given" or "evidence"[71]. Let me take the word "awareness" for example, although similar comments could be made about the other words mentioned here. If I say that I am aware of something, I could be referring to present, conscious awareness, awareness-in-consciousness, or to knowing something to be the case even if "evidence" for this knowledge is not phenomenally present. If I am aware that my missing book is red, then this book which I see on the table cannot be the missing one. This sense of "aware" refers to a fact or proposition, which typically belongs to a chain of reasons leading somewhere: "I am aware that Barack Obama is inexperienced, but I intend to vote for him anyhow". There is a different, more phenomenal sense of awareness, as in: "I am aware of a slight pain in my leg". Awareness of the second kind tends to imply or include awareness of the first kind: if I am aware of a red sensation as a look at this book, then I am aware that this book is red. But the first kind does not often imply the second kind: I am aware that the Eiffel Tower is black, but have no current phenomenal experience confirming that for me. I am aware of this because I "know" it, namely, have learned this to be the case in the past. Awareness of the second kind leads to me to posit things as being the case, at which point my mind can store them away as

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[69]    *Ideas I*, Section II, Chapter 3 (p. 147).

[70]    The former term is more typical of Husserl, but I believe the latter serves better to communicate the intended concept in the context of English-language philosophy in general, and philosophy of mind in particular.

[71]    The ambiguity in question in less apparent in common English usage in the case of "evidence", but adheres to this word as the translation of Husserl's *evidenz*, where it acquires a technical, phenomenological meaning.

knowledge and include them in my overall picture of the world, long after the direct sensory evidence has passed. Husserl uses the term "evidence" to mean evidence coming directly from the senses during a particular perceptual episode, rather than the way the term is used in a court of law or among scientists[72].

To the above distinction corresponds two different ways of seeing the process of human reasoning in general, or perhaps two different kinds of reasoning. One kind is where facts are synthesized, where they become "reasons" in the service of further thought: this book is red, the missing book is not red, therefore this is not that book. What matters in this case is the factual content of the reasons in question, not the manner by which I acquire them. The line of reasoning just demonstrated would be the same whether I knew the book was red because I saw so, or whether I was on the telephone with someone looking for a book in my bookshelf while I was away. The distinction between acquiring knowledge through direct phenomenal evidence, or by other means, is not relevant to what I do with that knowledge—how I include it in reasoning episodes. One might be inclined to treat all reasoning along these lines, arguing that the distinction between acquiring knowledge through sense-data or otherwise is unimportant or unsustainable[73]. One would be forced to do so, in my opinion, if one were reluctant to

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[72]  *Cf*. Ideas *I*, p. 381.

[73]  Even if all knowledge-acquisition requires sense-data, the sense-data may be unrelated to the fact known, such as when I ask someone over the telephone what color something is. There seems to be a phenomenological difference between knowing something is red via red "evidence" or via other sense-data which refers symbolically or indirectly to this redness. Phenomenologically, this represents two different *kinds* of evidence. As I am now arguing, however, this can be questioned, and not only along the lines I am about to present, which are "analytic" in character and were inspired in part by John MacDowell and Wildred Sellars. Within Continental philosophy, this particular distinction can be seen as a weak point in Husserl's system exploited (sometimes indirectly, i.e., via

infer that other minds were like our own.   Suppose you and I both see a red book, and by our interaction I am convinced that you perceive, as I do, that it is red.   By inclination, I assume that you do so because your have at some point a phenomenal episode where a red quale appears to you.   But it is conceivable that you are colorblind, that you have installed a secret camera and microphone in this room, and that someone monitors our conversation and feeds information about colors to you through a hidden earpiece. You might even be a robot who gathers information about the environment in a manner which has no conscious, sensory experience attached to it.   So it may be that the distinction between gathering information "phenomenally" or "inferentially" has no objective validity or usefulness, even if it is consistent with my own experience.   Phenomenology, conversely, is not reluctant to generalize from private experience to objective validity: after all, my experience is an objective part of the world, and the probability of such scenarios as the ones I just outlined is so small, one could argue, that they can be safely ignored.   My red quale is private to me, but is still a fact of the world that I have this quale, and the quale is a "thing" in the world if we take the definition of the word "thing" liberally enough.

Whatever one's opinion on other minds, the crucial point here is that phenomenology distinguishes between reasons which are part of reasoning episodes and reasons which ground these episodes because they are drawn directly from phenomenal experience.   These are not a *ground* of reasoning simply because they are a place where reasoning starts, like mathematical axioms; instead, they are transitions between reasoning as a mental activity and a "raw awareness" which is a mental phenomenon distinct from reasoning.   Phenomenology is opposed to an understanding of mental life in which there is one overall concept of "reason" (in the sense of "a reason for *X*") and that reasoning is "closed", that reasons always and only follow from other reasons.   Phenomenology argues that a subset

its effects on other distinctions) by Derrida in his "deconstruction" of phenomenology (cf. *Speech and Phenomena*).

of such reasons rest on experiential episodes which are, in some sense, "pre-rational". I say "in some sense" because these episodes still have some rational aspects to them; yet they have a pre-rational aspect which is logically separable and which we can focus on during phenomenological analysis.

Suppose a reasoning episode begins with a red quale. It would be impossible for me to ignore the fact that it is red, and that as I experience it as red I also *posit* it as red. All experience has this "positional" character, as Husserl puts it[74]: it is always posited that *the experience itself* is a certain way. All experience therefore has a rational dimension internal to it: it is always available to further reasoning, but, additionally, the very *having* of an experience is a rational act. The having of an experience is always an acknowledging of that experience as being a particular way. However, Husserl assumes that this "doxic" character of experience can be ignored, and that we can, in episodes of phenomenological reflection, focus on the experience as experience. There is a "thisness" to any experience which is logically separate from its informational content. Phenomenology, therefore, can entertain the possibility of a realm of consciousness which is pre-rational and which involves a raw awareness of the world, a primordial opening onto the world, out of which rational activity flows. Husserl struggles to properly articulate the relationship between pre-rational awareness and rational thought. It requires considerable linguistic agility to avoid giving the impression that we are arguing for episodes of pre-rational awareness which lack rational content entirely. In reality, phenomenology maintains only that this rational content, although internal to all experience, does not exhaust the ontological extent of experience. Experience itself is something other than its rational content: my red quale is something other than the fact "this is red" entering my space of reasons. Husserl assumes this distinction (between an experience as a "thing", a presence in consciousness construed as an ontological region, and its rational content) in order to

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[74]  *Cf. Ideas I*, p. 321.

analyze how it is bridged, how experience as information-bearing datum emerges from experience as raw phenomenal presence.   Such analysis, in the "Phenomenology of the Reason" chapter in *Ideas I* and in the "General Structures of Predication" in *Experience and Judgment*, would be nonsensical if the original distinction was not presumed.

**The rational structure of "raw awareness"**

Note, however, that "raw awareness" has a rational structure even aside from its positional character.   A red quale does have rational structure insofar as it posits redness, and is determined as red. However, it has another kind of rational structure, which is immune to the distinction between *that which it is determined as being* and the quale itself, and therefore to the "bracketing" of its rational element so as to reflect on the quale as "pure experience".   A red quale is necessarily a visual experience, and there is a rational order internal to visual experience in general.   Any visual quale will belong to some patch of perceptual space; it will appear to have a location somewhere in orientation to myself and my line of sight.   It will change its size or shape as I move around.   It will be flanked by other qualia with different colors, which demarcate it.   These are transcendental structures of visual experience, and by reflection on these structures I acquire essential or "eidetic" insight.   Visual experience has a rational form separate and apart from its rational *content*, viz., what I visually see to be the case.   The same could be said of conscious experience generally.   There are rational structures which make conscious experience possible, and these can be distinguished from the rational activity of consciousness as it notices what is the case.

Phenomenology, therefore, recognizes two different *kinds* of rationality: pre-rational experience has its own kind of reason, but one which structurally contrasts with rational activity in general.   I cannot discover the inner rational structure of experience as such so long as I understand "reason" only in terms of high-level cognitive acts.   We can call normal rational activity "macroscopic" rationality: the

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rationality which I, as rational agent, exhibit as I interact in deliberate ways with my environment. Macroscopic rationality is organized in ways useful for the empirical structure of the environing world. It is primed to recognize functional organization, categories and classes, high-level structure, and other complexities in the environment.   It tries to frame phenomena functionally or via systems of classification.   Husserl tries to show how this rationality, the rationality of the "natural attitude", emerges from the structurally different rationality inhering in all conscious experience, which we can call "microscopic".   He also tries to analyze the latter rationality on its own terms, cataloging the structures of pure experience we can find introspectively: in *The Transcendental Structure of Time-Consciousness*, for example.   We see now that "bracketing the Natural Attitude" is necessary to transcend the kind of rational activity we make exercise habitually, primed as it is for our functioning in the macroscopic world, precisely so that we can discover the "microscopic" rational organization of raw experience[75].

This approach to consciousness can be compared to functional or biological approaches which try to reduce consciousness, at least for scientific purposes, to its functional or biological role. Consciousness obviously plays such a role: it is the primary means for us to get information about the world which we need to survive.   The human brain, which is conscious and/or has consciousness, gathers information far more efficiently, with respect to the energy required to do so, than non-conscious like computers.   This might explain why consciousness evolved in biological and information-theoretic terms.   Any conscious experience, through its determinate content, also plays a role in rational activity. This role can be functionally defined, so it is possible to functionally analyze conscious states in terms of dispositions, on the basis of being in a conscious state *S*, to consent to a proposition *P*.   In doing so, we

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[75]   The terms "macroscopic" and "microscopic" are my own.   The latter term seems less appropriate for the kind of rationality in question than the former, but it usefully announces its contrast to the former.

operationalize consciousness in terms of the contribution it makes to our rational activity in general. We view consciousness from within the natural attitude. When we bracket the natural attitude, we bracket this stance toward consciousness; we strive to achieve a deeper awareness or "ownership" of our own consciousness. Phenomenological reduction begins with consciousness changing stance toward *itself*.

The next chapter will discuss this relation between phenomenological reduction and self-consciousness in more detail. Before proceeding to that discussion, however, I want to return to the project of comparing phenomenological reduction to physical reduction. So far, I have argued that we need to suspend the natural attitude because the kind of rationality which belongs to that attitude, and to the everyday reasoning which defines it, is inadequate for analyzing the inner rational structure of pure experience. Simultaneously, we realize that episodes of high-level (macroscopic) reasoning are reducible to episodes of conscious experience, because the contents which form the minimal episodes of such episodes (such as sense-data) are themselves conscious experiences. As we *bracket* the natural attitude, which is oriented to macroscopic reasoning, and focus on conscious experience *sui generis*, we also *reduce* macroscopic reasoning *to* conscious experience. The new realm, consciousness *sui generis*, *replaces* the natural attitude because it remains after the latter is bracketed, and is also developed as a reductive base *for* the natural attitude. I now want to compare this situation to the relationship which exists between high-level and low-level reality in the realm of physical reduction.

The macroscopic reasoning which defines the natural attitude also governs our scientific understanding of the macroscopic environing world. The scientist uses the forms of reasoning typical of our natural, practical rational agency. The biologist, classifying living forms, is simply doing with formal criteria what we do everyday as we sort the things of the world into categories. The chemist, analyzing how atoms link to form molecules, is exploiting cognitive structures evolved for our minds to handle to complex organizational patterns of our societies and within our environment. The high-level

world of these sciences *is* the world of the natural attitude, and it is characterized in terms of functional

systems, complex organization, classifications, etc.   As I argued earlier in this chapter, however, the

world of low-level physics is different.   In order to understand this world, we need to suspend the

intellectual habits which work so well in the macroscopic world.   Functional, sortal, and organizational

logic needs to be put aside.   The quantum world has neither innate functional structure nor natural kinds.

There cannot be any metaphysically innate categories of nature because by being "metaphysical" they

would not need physical energy to be sustained.   For similar reasons, one cannot analyze quatum

mechanical reality on functional terms.   To say that there is a functional scheme of organization

operating within a physical system is to locate within that system information which the system itself

cannot sustain.   Individual systems *within* the universe can be functionally organized, but the universe

itself cannot be.   Just as raw awareness has its own rationality, though, the world of string theory and its

relatives has a rational structure of its own: the mathematical structure of the dimensions and curvature of

space, of vibrational patterns, of location and givenness in space, etc.   "Thereness" is a rational

phenomenon; it contains within itself a rational determination about the world: a particle's being *here* is

an objective truth about the world.   This is the physical equivalent to the phenomenological notion that

the mere fact of *being* an experience has a rational dimension, because any experience has a particular

character.   Just as we can logically separate the experience itself from its determinate character, though,

we can also logically separate the haecceity of a particle from the empirical determinateness which is

introduced into the world insofar as the particle *is* just there.   The world of physics on its lowest scales

has its own rational patterns which cannot be understood via our usual rational activity.   It can be

*investigated* via this activity (there is no other way to investigate it), but, within the natural attitude, we

can do no more than look upon quantum mechanics or string theory as *theories*, as, in effect, scientific

stories about what the world may be like.   We would have no way to consciously register the world of

string theory as *the* world, which is different from accepting string theory as a scientifically adequate

story *about* the world.

To see this, imagine trying to explain string theory or quantum-mechanical information theory to an intelligent, but non-conscious, robot. This robot has been trained to learn most science. You could teach him the assumptions, data, and analyses behind biology or chemistry and he would behave like a competent biologist or chemist. How about when you get around to discussing string theory with him? How would you define strings themselves for him? Above, I called strings "manifolds of matter or energy". But what does this actually mean? First of all, matter and energy themselves are terms which need string theory to be given a precise, contemporary definition. A string is "matter" if it has mass, and "energy" otherwise. The property of having mass is itself a product of the string's vibration. So the underlying substance for strings is neither matter nor energy, but some generalization of the two which we can express with a phrase like "materiality as such" or "physicality as such". In order to even define what strings are, we need to so something akin to Husserl's method of generalization, where we abstract from concrete experiences of physical phenomena an eidetic "physicality" common to all of them. But how would the robot do that? The robot, of course, could consider the *set* of all physical things, but to gather things into a set is different from discovering the essential generality lurking within all of them. The robot's "mind", upon considering the class of all physical things, would be no nearer to contact with the eidos *physicality as such*. So it seems that the robot could not *understand* string theory the way that we do, even if he could be a competent string theorist in all outward, or behavioral, respects. The robot simply could not understand the ontological ambitions of string theory.

Consider, likewise, the case of information. A central distinction in modern information theory is between information as *content* and information as *energy*: between information content and the matter or energy which "bears" and "carries" that content. The word "information" applies to both. I can say that the flickering line on my computer screen carries the information that the cursor in my current

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document is in a particular place; or that this information *exists* because there is energy which carries it, so the information as *existing is* that energy. But how could I communicate these ideas to the robot? The matter/energy which carries the information is a kind of "pure substrate" which *carries*, but is not *constituted*, by information-content. The robot, however, lives in a world of information-content. The robot does not have red qualia, although it has means to acquire the information that something is red. Unlike the robot, we can distinguish the information content (this is red) from the energy which bears this information, through the distinction I discussed earlier between the doxic element in an experience and the experience itself. Our consciousness gives us a ground for distinctions which non-conscious beings cannot make. By implication, then, non-conscious beings cannot understand information theory on our terms, even if they can work with it as a mathematical model or story.

Both information theory and string theory rely on the ontological notion of a "physicality as such"—whether as the primordial substance out of which strings are formed, or as substrata to carry information—and, I believe, this notion is only available to us because we are conscious beings. It enters into our space of scientific reason because we can perform an implicit act of phenomenological generalization, extracting a primordial "thereness" from all particular physical phenomena we experience. This argument builds from (or, perhaps, is foreshadowed by) §39 of *Ideas I*, where Husserl argues for "Sensory experience as the ultimate source of the general thesis of the world"[76]. The physicality of the world is its *thereness*, its availability for conscious experience, and its power to create an impression within my consciousness, to be a "presence" for and within my consciousness. Nonphysical things are not "present" in this sense, although they may be presently occupying my thoughts. Abstract entities, such as numbers, may have a temporal presence in that during a certain phase of time I may be thinking

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[76]  This phrase is taken from the analytic index, due to Ludwig Landgrebe (p. 437).

of them; but physical phenomena display a corporeal presence which has, but transcends, this kind of temporal presence.   Only on the basis of this presence, I believe, do we have ground for conceiving "physicality as such", and therefore cognitive access to the ontological stance taken by modern physics.

This argument concludes, then, that physics rests on phenomenology in a very specific sense: we need a phenomenological analysis of our experience of the "physical as such" to explain how it was cognitively *possible* for the concept *physical as such* to enter the realm of modern science.   I certain do not claim that physics rests on phenomenology in that physics *cannot be done* without prior phenomenological work, or because physical objects or the physical as such are actually "in the mind". Phenomenological analysis merely brings our attention to events within consciousness which are part of the cognitive architecture of modern science.   Science rests not only upon a series of assumptions, but on a stance we take to the world as conscious beings and which exploits consciousness itself, often without our being aware of precisely how.   We project structures of consciousness into the world, such as "raw presence" formalized as "haecceity"; though this is not to say that these notions belong in our minds only.

The structures of consciousness which are implicit in this scientific framing of the world, however, do not belong to our normal rational activity; to analyze them, we have to bracket the natural attitude.   The phenomenological analysis of raw awareness is a logical correlate to physical theories which operationalize concepts like "physicality as such".   In both cases, the high-level empirical structure of the world, with its functional and sortal character, is bracketed.   So, too, are the typical rational activities through which we explore this structure.   And, just bracketing the natural attitude is also reduction—high-level reasoning reduces to events within general conscious awareness—so, too, the macroscopic world environing the subject in the natural attitude is both reduced to the world of quantum mechanics as its ontic components, *and* intellectually replaced by that world after the bracketing.   In both cases, too, we then face the problem of reconnecting the microscopic and the macroscopic: how does the

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high-level world, with its functionality and complex structure, emerge from the low-level world of pure haecceity, of raw "thisness"? How does our high-level rational agency, attuned to functionality and complexity, emerge from a conscious realm of raw awareness? In subsequent chapters, I will explore this emergent relationship between the micro and the macro in both physics and phenomenology. The next chapter, however, will return to a point I made above about bracketing the natural attitude as a stance which consciousness takes toward its own activity. Prerequisite for a critique of the Natural Attitude is that consciousness is also self-consciousness, which thereby becomes a crucial part of phenomenology.

**Chapter III**

In the previous chapter, I argued that contemporary physics makes some assumptions which require phenomenology in order to be clearly stated.   These are not hypotheses formulated in the language of physics; instead, they are embedded in the mental acts which give sense to concepts like space, time, matter, and energy.

The physical theories which rest on this implicit phenomenology do not logically depend on it; they can still work as theories if their phenomenological foundation is rejected.   What would be altered in this case is the "metatheory" of what these theories actually accomplish.   We would require a different philosophical story *about* these theories.   For example, the   notion that quantum mechanics or string can offer the most fundamental possible theory of the natural world could be rejected.   We could interpret particle physics as a theory about the empirical data physicists actually observe—such as images from a bubble-chamber—rather than as a theory about elementary particles as such.   I believe, however, that in order to understand physical theories on their own terms, according to the philosophies of the physicists who actually develop them, then we need to explore the phenomenological foundations for these theories as constructions of the human mind.   To demonstrate this point, I will engage a thought-experiment involving hypothetical physicists who each have different philosophical perspectives on their own theories.   First, imagine a string theorist (call him Karl) with a vivid sense of imagination who becomes convinced that the universe is really a computer program run on a vast supercomputer.   For argument's sake, suppose that Karl calls this computer Rover.   Karl then argues that the strings studied by his colleagues are actually memory addresses in Rover's RAM, which have a number that encodes how the strings vibrate.   Karl infers that Rover is programmed to calculate string interactions with the same quantum field equations that real physicists use to model particle interactions.

Karl can legitimately claim that string theory represents an accurate *description* of physical reality, even if his story about physical reality is quite different from his colleagues'.   It is useful to articulate where they agree and disagree.   Suppose Karl is joined in debate by his less fanciful colleague, Bill.   Karl and Bill disagree about what strings *are*.   Bill feels that strings *actually* are little loops of energy.   Karl argues that although they *behave* as though they were little loops of energy, they are actually Rover memory addresses.   Both see string theory as a description of strings, but Karl sees the theory as describing string *behavior*, while Bill sees it as describing strings *themselves*.   Bill and Karl therefore disagree on what string theory has accomplished, and on the relationship which exists between the mind of the physicist who understands string theory and the physical world.   As I will argue toward the end of this chapter, a philosophical story about a scientific theory is also a story about the human person who entertains this theory, and so has a self-conscious aspect: it is a human mind reflecting on its own place in the world.   I will begin the chapter, however, by expanding on the imaginary dialogue I have sketched out between Bill and Karl.

**Physical theories and the phenomenological concept of "things".**

Having presented the positions of Bill and Karl, I want to add one further imaginary participant in the debate.   Imagine Pat, a physicist with a view similar to Bill's, but who is impressed with the suggestion that the structure of the early universe was "tuned" to ensure that the universe could eventually support life[77].   Although Pat does not picture the universe as virtual reality within a computer program,

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[77]   *Cf*. Barrow, p. 117, on the fundamental constants of nature and p. 119 on the version of "design theory" inspired by them.   Had such constants as the speed of light and the Planck length been even minutely different, the universe's history could have changed dramatically, and the stable elements and galaxies where and from which life eventually evolved may never have formed.

he does imagine that some intelligence was active in shaping the early universe.   My aim is to describe phenomenologically the substance of how these three views differ from each other.

Suppose that Bill is convinced that his theory differs from Karl's.   Recall that for Karl, string theory accurate describes string behavior; Bill makes the further assumption that the theory describes what strings *are*.   Bill therefore makes an implicit distinction between strings and their behavior: a string is not just how it behaves, and a description of its behavior, on its own, is not an adequate description of the string itself.   The question we should then ask is what Bill feels his theory has accomplished insofar as regards the theory as describing strings themselves, and not only their behavior.   The idea "in play" is the "actually" in the claim that string theory describes what strings "actually are".

Bill must assume that two things can have identical behavior and yet be non-identical.   A string conceived as a memory address and as a loop of energy may behave alike, but one or the other is an inadequate representation of the string's "inner nature" or inner identity.   Only one addresses the string's haecceity, what it is "in itself".   Consider, now, the cognitive source of this claim.   Bill may well be motivated by a distinction between *kinds of describing* which we do in normal life.   I can describe something by what it does (a tree sheds leaves, blows in the wind, grows upward) or by how it is (green and brown, hard, tall).   I have no direct perceptual experience of a quantum string akin to a tree.   I can, however, imagine myself shrunk to the quantum scale and simply looking around.   Bill thinks that Karl's story is wrong and that, were this shrinkage possible, I could verify as much by simple perception: I would look at a string and "see" it there as a little vibrating membrane.   I could disprove Karl's story just by shrinking to the right scale and seeing all those little strings, with no hint anywhere of a computer or computer program.   I would have no perceptual encounter with Rover and therefore no reason to believe that Rover exists.   Bill assumes, we can see, that a correct theory outlines *potential perceptual encounters* we can have with the objects which the theory purports to describe.   Even if real perceptual

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relations between ourselves and these objects is impossible, the notion of a *potential* perceptual encounter, one embraced by hypotheticals like "if I could be shrunk to quantum scale", regulates our judgment as to what the theory seeks to accomplish, and what we can reasonably assert about the world if we judge the theory to be true.   A theory is true, in other words, precisely to the degree that it describes what direct perceptual encounters with its objects would be like were they possible.

Karl's theory, on the other hand, even though it involves Rover, does not outline hypothetical perceptual encounters with Rover.   Karl gives no comment about how Rover appears in any perceptual sense.   Rover's place in the theory is not that of an entity within the perceptual furniture of the world; Rover, instead, is a nonperceivable agency influencing the empirical structure of the world.   Rover is not a "thing" in the phenomenological sense articulated near the end of *Ideas I*.   Since I think Husserl's concept of "thing" is useful to distinguish these tow theories, I will here rehearse this concept.

To begin with, note that Husserl regards experience as always endowed with some properties.   It is the nature of a visual experience, for example, to take on a certain color.   Most experiences, however, appear to be experiences of objects of perception (noemata), so that the property of the experience (the property as *noetic*) is *experienced* as also attributable to the object.   Noetic properties are experienced as properties of noemata, insofar as they are experienced at all.   It is equally part of experience that the noematic properties continue to inhere in their objects over time, and that further experience of noemata will reveal further properties.   Once I judge something as red, I expect it to remain red.   At the same time, I expect that were I to look at it from a different angle, I would sense further properties which could be synthesized with this redness.   If I see one side of a two-sided object to be red, I could flip it over and check the color on the other side, and flip it again to see anew the original perceived redness[78].   My

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[78]   *Cf*. Experience and Judgment,

impression of the one side, then the other, would be synthesized into a composite picture of the object:

> The Idea of the Thing…is represented in consciousness by the conceptual thought "Thing", possessing a certain noematic structure (*Bestand*).    To each noema there essentially corresponds an ideal self-contained group of possible noemata which have their unity herein, that they are capable of a synthetic unification…[79]

Husserl argues that even when we picture fanciful things ("winged steeds, white ravens, golden mountains, and the like") we picture them *as* things, in the sense that were they to exist, they would be things and enter experience the way that things do; "presentations of them serve for purposes of illustration just as well as presentations of things of real experience.   Through such material"—whether real or imaginary things—"we apprehend in idea and with intuitive clearness the essence 'Thing' as the subject of Noematic determinations" (412).

To be a thing, then, is to be characterizeable in ways which are embodied in the concept of noemata, or "objects of experience".   In particular, it is to be characterizeable in terms of properties of experience regarded as objective as well as subjective.   This assumption governs my experience of things even to the degree that this experience is incomplete.   I never discover all of a thing's properties.   However, as I experience a thing over time I come ever closer to a thorough knowledge of it: "*every imperfect givenness…*contains *within itself a rule for the ideal possibility of its perfecting*" (413).   A thing, however, must be a stable and coherent ground for continued exploration; if I am imagining a thing, I am bound by certain rules:

> It belongs to the essence of the appearance in centaur form which I have before me now—an appearance which gives the essence of the centaur in a merely one-sided way—that I seek out the

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[79]    *Ideas I*, p. 411.    Subsequent citations will be in parentheses.

different aspects of the thing, and in free fancy can determine and render intuitable what is at first undetermined and left open.   In regard to the development of this process of phantasy, as it becomes every more perfectly intuitional and more clearly determinative, we are in large measure *free* agents; we can indeed at our own free pleasure endow the fancied centaur intuitionally with more closely determining properties and changes of property; but *we are not completely free* if our advance is to take the form of a *consistent* (*einstimmmigen*) course of intuition…[*As ontological*] *region 'Thing' prescribes rules for the course of possible intuitions…*(413)

A thing, however, is not only a base for a synthesis of perceptual qualities.   It is a coherent foundation for synthetic perceptual exploration because of an inner stability, an inner tendency toward the perpetuation of instantiated properties, which we experience as belonging to physical matter itself.   A thing is "*res materialis*, it is *substantial unity*", as well as being "*res temporalis*, in the *necessary 'form' of Time*" (415).   "The *regional Idea* of the Thing"—in the sense of "ontological region" which Husserl would refine further in *Ideas II*—

> *prescribes rules for the manifolds of appearances*.   It comes to this: they are not manifolds in general, coming together by accident, as indeed already follows from this that in themselves and on purely essential lines they relate to the Thing, the determinate Thing.   The regional Idea prescribes series of appearance that are fully determinate, definitely ordered, progressing *in infinitum*, and, taken in their ideal totality, precisely limited and fixed.   (417)

so to be a thing is to perceptually appear, to obey the rules of perceptual appearance, but these are not psychological rules; they are rules of nature.   The spatiality, stability, coherence, and susceptibility to continued and improved investigation which things display, belong to physical nature itself.   The availability of   objects in the "ontological region" of physical things to perceptual appearance, is constitutive of physical reality as such: the properties which make something physical are also those properties which make it perceptible, where "perceptible" means not only present to perceiving consciousness, but also explorable (stable, coherent, temporally extended) by perceiving consciousness.

The objects of string theory are not actually perceivable, but at least they are drawn from a conceptual repertory drawn from macroscopic things which we do perceive.   We can conclude, then, that

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a string is a thing in Husserl's sense, even if it is too small to be seen.  Return, now, to my imaginary

physicists.  In Karl's theory, Rover is not a thing.  Rover never *appears*.  Something similar can be said

for the agency which, on Pat's theory, is presumed to have influenced the early cosmos and guaranteed its

hospitability for life.  This agency affected the stuff of the young universe, but it did not so in such a way

as would render it perceptually manifest to a hypothetical consciousness.  It is not as if we could visit the

young cosmos and "see" this agency operating.  By stipulation, we discover this agency only by

induction, only by the empirical "trace" of its effects on the world.  Both Karl and Pat, then, include in

their ontologies entities which are presumed to have an impact on the empirical structure of physical

reality, and yet are not available to consciousness in the manner of "ordinary" physical things.

Notice also that for Karl, strings themselves are not "things" in Husserl's sense.  Karl assumes

that string theory describes strings' behavior, but that strings are not "perceivable", not even *potentially*

perceivable in an imaginary scenario where we could shrink to quantum scale.  This is because string are

"really" memory addresses, and only "look like" vibrating loops in the virtual reality created by Rover.

Karl's strings are entities whose behaviors we can describe—so which are available to our minds as

objects of descriptive investigation—but which are not in their nature available to perceptual experience.

Pat has an agency whose presence can be inferred, but which cannot be perceptually encountered.  Both

of these latter stories, then, attribute to us (as owners of perceiving consciousness as well as rational

minds) the ability to discover empirical truths about physical nature, but they fail to construe availability

to perceptual consciousness as constitutive of the physical as such.  For Karl, the minimal constituents of

physical reality (strings) are not thus available; for Pat, strings are affected by influences which are not

thus available, and so we fail to explain the laws of nature in their totality insofar as we restrict our notion

of the physical to this availability.  Bill's story, on the other hand, remains effective if we construe

phenomenological availability as a kind of test of the ontological commitments of a theory.  We may

wish to stipulate that a viable theory of physical nature is one which refuses to posit any entity, operating (in any empirically effective way) within nature at its deepest levels, which cannot be perceptually encountered either by real consciousness or by a suitably idealized perfecting of our consciousness, whose perceptual powers are not limited by considerations of scale, possibility or error, and the like. This "filter" would let Bill's story pass, but it would screen out both Karl's and Pat's stories.

**Phenomenal awareness and physical locale**

I will now explore further the idea that Bill's story could be confirmed by an imaginary consciousness which could "see" at the quantum scale and therefore simply look at a string and see if, in fact, it is indeed a vibrating loop of energy.   This idea supposes an idealized (or "transcendental") visual encounter between a string and a perceiving consciousness, and therefore presents the string as a visually appearing object, with all the specific forms which this entails: "a spatial thing always appears…in a certain 'orientation', oriented, for instance, in the visual field of view as above or below, right and left, near and far;…at a certain 'depth' or 'distance' [from us]" (418).   A visual thing can be framed in our line of sight, isolatable from the surrounding space, and also from other objects which might be seen around it.   In an idealized example of visual perception, one which fixes the meaning of the concept "visual thing", we can picture one single thing in a visual field, with no other visual entity around it.   For something to be visual, then, is always for it potentially to be isolateable from all other visual things, to exist in a "vacuum" with its own "private" surrounding space.   To the degree that physical matter as such, therefore, is potentially visualizable, available to a (suitably idealized) visually-perceiving consciousness, we must construe physical space and time as composed of "locales" wherein are found individual objects.   Carrying this idea to the smallest scale, any physical particle (or string) resides in a private locale in which no other physical entities, no agents having any bearing on physical nature whatsoever, are present.

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To put it differently, for any not further divisible physical particle, we can select a sufficiently small region of space to call the "locale" of that particle—such that the particle is the only physical agent present. Notice that this notion of "locale" is unavailable to Karl and Pat in their respective stories discussed imagined in the previous section. For Karl, since space itself is a simulation by a computer program, Rover (the computer) itself obviously exercises influence, and is therefore a physical agent, on any region of space, including one we might try to identify as a particle's locale. Rover would be "present" along with the particle in its locale, present in the sense of exerting influence there, even if not "phenomenally" present. Pat, too, would need to stipulate that a designing agency would at least be *potentially* present in the locale of any given particle. To be more precise, suppose that Pat tries to make his theory as plausible as possible by supposing that the "designing agency" influencing the early cosmos does not alter physical reality by force of will alone. Suppose this agency wishes to change the properties of one given particle, and, rather than being endowed with the power to change it directly, would need to emit, or cause to be emitted, some other particle—a photon, for example. This designing agency would not then be directly operative in the locale of the original particle, but would still be "present" in the sense of influencing the causal history unfolding at that locale. When the two particles interact, the agency will be "present" in that encounter precisely as part of its reason for being. It is only on Bill's story that spacetime can be truly regimented into distinct locales, which have no communication with each other except insofar as particles, traveling between locales, can collide and interact.

This latter picture, however, is consistent with modern information theory. For any unit of information, at any given moment in time, there is only one spatial locale in which that information can be detected. Information exists in several places at once only by being copied. A single piece of information has spatiotemporal location, which is why we can talk about information "traveling" from one place to another. Now, I'd like to claim that this whole picture of information, particle isolateability,

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and spatiotemporal locales, which derives from physics and information theory, has a parallel in the realm of phenomenology. We gather information about a physical object by situating ourselves relative to it: we align our own locale with the object's, such that information can travel from the latter locale to the former. To *observe* is to receive information which has become proximate to our own locale, traveling through light or another form of energy from the locale of the observed thing. We do not acquire information about physical objects by magical insight. If I want to know the color of an object (which I have never seen before) in another room, I cannot have this knowledge pop into my head by thinking real hard, the way I can perhaps recall what I ate for breakfast two days ago if I focus on this question long enough. I would need to walk into the other room and look at the object: I would need to position myself in proximity to it such that the relevant information has a chance to travel to me. We gather information about physical things in narrowly delimited ways, delimited not only by the restricted power of our senses, but also spatiotemporally. Any time that there is a piece of information we acquire, there is a spatiotemporal configuration governing how we had access to that information. The structure of perception mirrors (and, we can assume, is caused by) physical and geometrical limits on information. This is another reason why we cannot theorize the empirical world around us as simply a repository of information, a collection of states of affairs; we must take into account how this information is distributed through space and time. Acquiring knowledge is not (only) a matter of entering mental relations to a given fact from among all the facts which obtain; it is a matter of physically and spatially orienting ourselves to a given source of information.

The ontological classification of entities which follows from Husserl's concepts of "real" and "ideal" (technically, "*irreal*"), and also from his distinction between material things as such and objects of

cultural and practical "value"[80], corresponds with a classification of how these entities *appear to consciousness*.   Let us, adopting some of Husserl's "regional" ontologies, classify entities as *ideal*, *material*, or *practical*, where ideal entities would include numbers and similar abstractions; material things would be purely natural things; and practical things would be tools, cultural artifacts, and other entities bearing properties relating to human action.   The distinction between the latter two categories may be imprecise, but no greater precision is needed for the present discussion.   Corresponding to these categories are variations in the qualitative experience of finding out about their objects.   There is one kind of experience involved in exploring the number 97; another involved in exploring a red pebble; a third involved in exploring a trackball mouse[81].   The distinction is not only between my experience of the objects in the sense of simply noting their existence: it is most important when it comes to finding things out *about* the objects, that is, experiencing their properties.

With exploration, I discover that 97 is prime; that the pebble is smooth; that the mouse costs $80.

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[80]    *Ideas I*, p. 422.

[81]    It is worth noting that I claim this distinction on purely introspective grounds.    The idea that experiences of a number, a    pebble, and a mouse is obvious from the mere fact that these are different things.    I am obviously making the stronger claim, however, that there is something more interesting about the differences: that they illustrate an experiential typology.    By implication, the experience of 97 is "like" that of 79 in some manner which can be illustrated by comparing both experiences to the experience of a pebble; the experience of a pebble is "like" that of a twig; the experience of    a mouse is like that of a touchpad.    By claiming that this classification is meaningful, I implicitly anticipate that others will consent to (or perhaps reject) this claim by consulting their own experience.    There is no way to "prove" this classification by consulting the meaning of words, or mathematically.

The experience of my mind becoming acquainted with an instance of primeness is meaningfully different from the experience of noting an instance of smoothness. Any acquainting with an instance of a material quality like smoothness occurs through experiences which have the characteristic structure of physical experiences in general. A smoothness "quale" has a spatial orientation, an affective impact on my sense-organs, a temporal delineation: there will be a finite temporal episode in which I experience a smoothness. There are no equivalents to these structural characteristics with respect to experiencing primeness. On the other hand, "works of art, books, cities, and so on" have "not only determinations arising from doxic experience (perception); rather, they bear determinations of sense in themselves which refer to our evaluative and voluntary behavior"[82]. The property of costing $80 is disclosed to in its own manner. This is not a property I can grasp just by perceptual exploration; I must ask someone, or read a price tag. The episode where I get this information involves, and presupposes, the use of language. Ideal, material, and practical properties have distinct modes of givenness.

In *Ideas I*, Husserl uses the notion of a particular mode of givenness to characterize types of *objects* in particular: "we have to bring to knowledge the complete system of conscious formations, covering all levels and strata, which constitute the primordial givenness of all such objective entities, and therewith make intelligible…the relevant type of 'reality'"[83]. So, for example, a material thing is defined as material insofar as it is experienced in material ways[84]. In would be wrong, however, to read Husserl as classifying things in different ways simply because they happen to appear to us in different ways. We

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[82] *Experience and Judgment*, p. 265.

[83] *Cf.* again *Ideas I*, 422.

[84] *Ideas I*, 417.

do not choose an ontological classification for its convenience, which might be affected by modes of experiential givenness.   Instead, Husserl implies that distinct modes of givenness are evidence for distinct modes of being: numbers and physical things appear to us differently because they are different in themselves.   The distinction is not between types of entities alone, but between *types of reality*.   When we say that material reality is a distinct type, or ontological region, we are discussing not only material things, but also material properties, material states of affairs, material events and processes, etc.   As I will now discuss, we are, in addition, recognizing a particular, demarcated form of material *information*.

**Physics and phenomenology on the nature of physical information.**

Physicists study   material things (and not, primarily, numbers, or objects of cultural value); physics therefore has, as part of its philosophical foundation, a story about what physical things are, a way of encircling within the entire universe of objects of thought a set which alone it will attend to.   A physical theory is only part of physics to the degree that it deals with properties, information, or events which are "physical" in this restricted sense.   A theory that cosmic gamma rays enter our atmosphere because Zeus is angry would not be recognized as belonging to physics, because it involves a property (anger) which is not adequately physical.   Intelligent design theory is also arguably flawed because it introduces psychological concepts (for example, rational decision-making) in the context of the early cosmos.   For intelligent design to be taken as a serious physical theory, our concept of the physical—of what kinds of concepts are appropriate or "in context" as parts of physical theory—would have to be expanded.   Examples abound of how controversies surround the question of what kinds of theories actually belong to a scientific discipline: is the labor theory of value an economic theory?   Is Jungian psychoanalysis a psychological theory?   Is the Book of Genesis a cosmological theory?   Scientists must demarcate an acceptable range of theories at the same time that they demarcate a range of objects corresponding to a given discipline.   Phenomenology shows us, however, that the process of demarcating

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such a range of theories is often driven by the experiential mode of givenness of the objects in question. The phenomenological modes corresponding to the ways in which we experience material things, and their properties, correspond to limits which demarcate the range of acceptable physical theories.

So, for example, intelligent design theory is unacceptable (under the current paradigm of physical theory) because it mobilizes concepts which seem out of place. If we try to explain the structure of the early cosmos by appeal to the rationality of the designer, we are availing ourselves of a property (here, the rationality of a design) which appears to us in specific ways. Consider the experience of rationality, the manner by which rationality as a property is disclosed to us. We do not become acquainted with rationality the way we become acquainted with redness or smoothness. Rationality does not inhere affectively and sensuously in perceptual episodes. Instead, we infer rationality by concluding that something (for example, an artifact found in the sand) was the product of conscious design. Because physicists refuse to regard rationality as the kind of property which could apply to matter or to the early cosmos, we see that the phenomenology of physical experience structures what kinds of properties they regard as legitimately available for physical theories. Our experience of physical objects supplies canonical physical properties from which we can identify which properties are, and are not, properly physical. Even though the quantum-mechanical property of spin, for example, is not perceptible, it seems similar to properties which are indeed perceivable, and dissimilar to ones, like rationality, which are not (at least not in terms of direct sensory-perceptual experience). We can sense the color and intensity of light; in quantum terms, we have a perceptual source for some of the properties which a light-wave can instantiate. Physics might introduce new properties of a light wave or a light particle, such as spin, but they are properties which seem to be of a similar "type". They do not change our picture of the kind of entity which a light wave is, as opposed to a theory which described light as happy or as culpable. Even though physics does not restrict itself to perceptible properties, it does restrict itself

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to properties which are thematically linked to perceptible properties.   Even though physics recognizes that large-scale physical things in our environment are not its proper concern, it still refers back to our perceptual encounters with these objects as a way of thematically specifying the kinds of properties which are available to theories that aspire to be considered physical.   Furthermore, the phenomenological modes of experiencing material things are also modes of acquiring physical information.   The fact that I only experience visual properties within experiences of a given structure—for example, that any experience of color is also the experience of a spatial extension—is a condition on visual information, on what kind of information can be legitimately identified as visual.   Husserl's analysis of doxic perception, of discovering physical properties through sensory, corporeal episodes, is therefore by extension an analysis of what constitutes physical information.   The fact that a pebble is smooth or a glass is red is physical information.   The fact that the glass is red is a piece of information, as is the fact that it is not blue; the fact that it is not bored, however, is not a piece of information, because the concept "being bored" does not belong to the realm of physical information.

Corresponding to different ontological regions are different types of information: physical information, mathematical information, etc.   Although physical information surrounds me everywhere, there are limits to how I can acquire this information, and information acquired by different means cannot be considered properly physical[85].   I can discover that a number is prime by abstract thought, but I cannot

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[85]   This is not quite correct, because I can acquire physical information indirectly.   I can learn something as red, say, by asking someone, just as I can learn a number as prime.   The difference is that the concept "red" is fixed by reference to perceptual encounters, whereas the concept "prime" is not.   If I know something as red, having asked someone else, I can assume that he   himself did have direct perceptual acquaintance with its redness, or himself asked someone who did, etc.   There will be a chain of reportings eventually ending in someone having this direct perceptual acquaintance.   Cases can be imagined where even

learn that something is red just by thinking hard enough.   If someone were to introduce a physical theory

involving a physical property which worked like primeness and not like redness—one which could be

discovered by pure thought, had no associated perceptual quale, and had no identifiable spatial

location—physicists would argue that the theory fails because the property in question cannot *be* physical.

As a rational agent awash in physical information, the limitations on what constitutes physical limitations

correspond to limitations on how this information enters my rational activity.   The fact that physical

information is spatially localized, for example, and requires energy to carry it from place to place,

corresponds to the image of myself as perceptual agent, attuned to physical occurrences in my immediate

spatio-temporal locale.   At any moment in time, I am in a given spatial location and susceptible to

physical influences operating in sufficiently close proximity to that location; I have no access to

information which is not sufficiently proximate to me in this sense.   To the notion of space-time divided

into distinct locales, then, corresponds the image of myself as a perceiving consciousness, *affected* by

physical phenomena, of consciousness as a sum of perceptual affects, and of an immediate perceptual and

affective horizon of experience.   These "transcendental structures" of awareness, which are prior to

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this fails: a space probe on a planet where red rocks have a distinctive density, say, and we know the probe is

studying some rock but lack the means to see it.    I assume that such cases are exceptional and artificial enough

not to affect the central claim: in general, where there is a piece of physical information circulating among people,

there is someone who has direct perceptual experience of that information.    This provides a basic set of kinds of

physical information—concerning colors, tactile qualities, and the like—which are supplemented by the more

exotic (and nonperceptible) kinds of information recognized by modern physics (about quantum spin, color, and

the like—note that "color" in the theory of quarks is unrelated to visual colors), but supplemented in conservative

ways, ways which still permit us to identify certain other kinds of information (the purported anger of a light wave,

for example) as non-physical.

rational thought itself, correspond to how physical information is characterized.   They are transcendental conditions on my access to physical information, on my consciousness being a "physical" consciousness, attuned to physical phenomena, properties, and reality.

Here, then, I think we have found an area of agreement and common ground between phenomenology and physics: both of these disciplines agree, in broad outlines, on what constitutes physical information.   This agreement can be highlighted by reading Husserl's analyses of "transcendental structures of awareness", and of the things which are discovered through this awareness, using the concept of information as an interpretive guide: we can retroactively read Husserl as analyzing how we acquire physical information, and, by extension, what physical information is.   I will try to defend this reading by summarizing the logical structure of Husserl's analysis of judgments insofar as they arise out of perceptual experience, focusing my reading on *Ideas I*.

**Husserl on the transcendental structures of raw awareness.**

A logical place to begin this summarial outline is with the third chapter of the first section of Book I, of *Ideas*, "The Region of Pure Consciousness"[86].   Of particular importance here is the final section (§55), "All Reality Exists through 'The Dispensing of Meaning'.   No 'Subjective Idealism'". Here, Husserl argues (after having discussed, in previous sections, how perceptual experience unifies diverse contents into a single experience) that "*all real unities are 'unities of meaning'*.   Unities of meaning presuppose…*a sense-giving consciousness*, which, on its side, is absolute and not dependent in its turn on sense bestowed on it from another source".   I read this claim as follows: all experience has structure and continuity.   For example, I rest my hand on the table top, and also look at it.   I feel a

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[86]   p. 47.   Subsequent citations in parentheses will again be to *Ideas I*.

pressure which extends from one end of my hand to the other; I also see a more or less unified color which extends through a portion of visual space.   I am disposed to experience the pressure felt at one point on my hand as linked to the pressure felt at another point; that they are part of the same perceptual episode.   If I think about them, they might diverge: I might feel the pressure more intensely on the ball of my second finger than on the palm of my hand, and the specific pressure felt on that finger could become a distinct sense-datum for me, a separate perceptual episode.   This need not happen, however; in general, gradations need not be experience in terms of the intensity of tactile sense, or the sense of color, etc., so that a given experienced quale, a given perceptual episode, has spatial form and continuity while still being one single episode.   It also has temporal continuity and delimitation.   Perception, then, consists in unifying potentially distinct perceptual elements into single perceptual episodes.

However, this unification is not purely subjective: it is not a matter of my freely choosing to gather together in one place several objectively distinct entities.   I   could imagining taking this mug over there, this book over here, and that pen over there, and placing them together on the table.   I can imagine synthesizing experientially separate things in a single mental image or decision.   The kind of synthesis, however, involved in (for example) experiencing pressure on two points of my hand as part of one perceptual episode, is experientially different from this[87].   The latter synthesis is experienced as driven by

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[87]   Another claim for a theoretically important distinction with respect to kinds of experience—a distinction which plays a formal role in an argument—which is made on purely introspective grounds.   I note this so as to highlight the importance which these kind of experiential distinctions, and introspectively grounded claims thereof, play in phenomenological analysis generally.   They form junctures where phenomenological arguments can be critiqued, but they are also part of the argumentative armature of phenomenology which phenomenology must defend in order for it to be consider a valid philosophical method in the first place.   I am receptive to possible arguments casting doubt on validity of introspective claims in general, but I also think that the ones I have

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the experienced, not by free rational activity: the continuity of tactile sense through my hand seems to

present, to me, a parallel continuity in the surface which I feel and encounter.   Even to the degree that I

"bracket" my assumptions concerning external objects as a source or cause of perceptions, I can still

include in my analysis—I do not have to "suspend"—details which are part of experience itself.   The

continuity experienced in my sensation is *experienced* as external continuity, as the spatial form of an

external physical object, rather than as continuity I just imagine or that originates within my own mind:

> If anyone objects, with reference to these discussions of ours, that they transform the whole world into
> subjective illusion and throw themselves into the arms of an "idealism such as Berkeley's", we can
> only make answer that he has not grasped the *meaning* of these discussions.   We subtract just as little
> from the plentitude of the world's Being, from the totality of all realities, as we do from the plenary
> geometrical Being of a square when we deny (what in this case indeed can plainly be taken for
> granted) that it is round.   It is not that the real sensory world is "recast" or denied, but that an absurd
> interpretation of the same[88], which indeed contradicts its *own* mentally clarified meaning, is set aside
> (168-9, the paragraph after the one quoted from above).

We see here Husserl beginning to break down the distinction between "subjective" and

"objective", challenging the notion that subjective reality and objective, impersonal fact were separated

by an impenetrable barrier.   Husserl is exploring a stratum or reality where the subjective and objective

coincide: the experienced continuity of a surface is subjective (because it is experienced, after all), but

also objective (because the shape of the experience also seems to be a shape in the distribution of matter

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made here (and called attention to) are rather innoculous, and offer examples of introspective claims in general for

further debate.

[88]   *I.e.*, if we think the purpose of phenomenological reduction to be skeptical rather than to direct attention
to experience as experienced, we will try to change the experience, for example by forcing ourselves during the
experience to also doubt the presence of the external world, even though this presence is part of the
experience.

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in the objective world).   Somewhat later Husserl argues as follows:

> Cosmical time stands in to phenomenological time in a relation somewhat analogous to that in which the "extensity" [*spread*] that belongs to the immanent *essence* of a concrete sensory content (a visual "extensity", maybe, in the field of visual sensory data) stands to objective spatial "extension", to that, namely, of the appearing physical object, manifesting itself in visual "perspective" through the medium of the sensory data in terms of which it appears (235).

This last passage is from the chapter on "General Structures of Pure Consciousness" (second in Section III).   Once again, "pure consciousness" appears in the chapter title, and yet the subject matter is not about purely subjective thought—it is not about free association, imagination, or fantasy.   "Pure consciousness" is *not* free, unencumbered mental activity.   It is not as if consciousness becomes "pure" because it is dealing with wholly subjective matters, imaginings where I am constrained by no empirical fact.   On the contrary, pure imagination and abstract cognitive operations are a derivative and atypical genre of conscious experience.   Normal consciousness is a collection of elements—perceptual episodes, qualia, distinct experiences, etc.—each of which unify subjective and objective aspects.

I believe that this quest for the meeting-point of the objective and the subjective is captured in Husserl's approach to intentionality.   Consciousness is *intentional* insofar as experiences have subjective aspects—they have distinct "feels", *what it is like to have* just that experience—and therefore experiencing is being *affected* in specific ways, and yet they also have objective aspects, in that just these ways, the way the experience feels as I am being affected, seems to originate from how the world is, and not from my free mental activity.   The redness of my experience comes *experientially* from the redness of a red thing, and that thing bears a redness which makes it impossible to experience it otherwise. Experience is intentional insofar as it is both affective and also constrained.   The specific object which constrains consciousness in specific ways—the red object which constrains me to having a red experience—is the intended object, the noema.   The constrained experience itself, or rather the quality

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which is constrained, which I cannot help but experience, is the noesis.    Note that these definitions work with respect to noemata in general, not just perceptual objects.    If I wish to think about an imaginary geometrical shape, I am constrained from picturing it as both triangular and quadrilateral; if I wish to picture an imaginary cow, I cannot but imagine it from one angle, as having some color, etc.    Even abstract and fantastical experience has constraints, which is why they, too, are intentional.

The two chapters I have mentioned in *Ideas*, dealing with "Pure Consciousness", are separated by extended methodological work which can be summarized as an apology for, and an introduction to, phenomenology's introspective mode of analysis.    The later of the two "pure consciousness" chapters is then followed by Husserl's exposition of the concepts of "Noesis and Noema", and then by a chapter on the "Theory of Noetic-Noematic Structures", which, on my reading, continues the project of unifying the subjective and the objective.    The "raw awareness" which is typical of pure consciousness is a vehicle by which objective reality, by affecting me, becomes subjective experience.    Visual experience, for example, includes the experience of surfaces and spatial regions.    These are vehicles through which I experience color, and therefore provide "gates" where an objective property becomes a subjective quale. Color is "objective" because it is a constraint on experience: when I see something as red, I cannot (with equal clarity) see it instead as blue, although I can imagine it as blue.    I encounter the objective by orienting my experience in such a way that I can *have* these constraints.    I learn about the world by being affected by the world, and the information I seek is found in those affects which are not in my power to resist.

The language I am using here—defining objectivity in terms of affective power—is a little more fanciful than Husserl's, but I think it accurately captures his arguments.    After presenting the noetic/noematic distinction, Husserl wants to analyze the relationship between noetic properties and noematic properties.    Noetic properties are properties of pure experience—of sensations, for example,

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"*hyletic*" data (*cf.* p. 284)—but, when they are experienced as emanating from perceived things and not from pure fantasy, they are also noematic properties: they are properties which are included in the process of fixing attention on an intended object. They are part of experience not just as affects, but as affects which are forced upon me, and which are therefore experienced as belonging to the noema, as "how it is". Notice that we are not yet talking about the noema as an external object "per se": we do not assume that my experiences actually are caused by external things. The noema is experienced as external, but the possibility exists that it is not—I may be hallucinating, for example. A property becomes noematic to the degree that it is *experienced* as external. Nonetheless, even though this experience may be factually wrong, it introduces a judgmental element into experience. If I imagine a generic redness, my imagining has no mention of something which, as a matter of objective fact, actually is red; but, if I experience red as linked to a given perceived object, then my experience includes the belief, the epistemic position, that the object *is red*, and so it has this judgmental component to supplement its purely affective character.

Here, then, is an important link in the development of Husserl's analysis: raw awareness, affective consciousness, becomes "positional": it becomes an experience of believing something to be the case, of hazarding a guess, of experiencing the world in ways which could be right or wrong. It is not as if there is a temporal progression between an affective red and red as a posited objective property, although there is a similar progression in Husserl's exposition. Husserl's point is that all affective experience has this positional or "thetic" dimension, and that as soon as we analyze "raw awareness" we must recognize that raw awareness is always accompanied by taking an epistemic stance, by making implicit claims to myself. This provides the "wedge" through which Husserl can defeat theories of consciousness which insist on separating the subjective and the objective, and also the bridge for Husserl between raw awareness and judgment in general, because once we have such simple claims as "this is red", it is merely a matter of detail to proceed to more and more sophisticated epistemic claims, including

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those of science.   Husserl develops an elaborate logical system to complete the details, in *Formal and Transcendental Logic* but also in the various analyses of doxic modalities and synthetic forms in the final three chapters of *Ideas I*, yet the crucial step is the argument that raw awareness has a structure which permits it to be a vehicle for "positional" claims—experiences having epistemic stances attached to them.

Returning, now, to the concept of physical information, the theoretical step I just described can be understood as the moment at which raw perceptual receptivity is reveal to be, implicitly, attunement to physical *information*.   The structures of awareness enable consciousness in general to be a vehicle for physical information to present itself to me affectively.   The fact that in visual and tactile experience I recognize surfaces, for example, is a structure which permits my experience of those experientially isolated surfaces to be a vehicle for information, such as that this surface is red and smooth.   My consciousness is "constructed" so as to be receptive to physical information, and a synergy exists between the structures of raw awareness, those internal to consciousness in general, and the nature of physical information.   The fact that color qualia can only appear to me in spatiotemporal form, for example, is a structure of raw awareness, a transcendental limitation on consciousness—yet is also wholly consistent with color as physical information, as can be verified by consulting the physical "explanation" for color.

**The self-consciousness implicit in physical theories.**

Given a particular kind of information, then, it is appropriate to ask what structures in consciousness offer a vehicle for that kind; this implies viewing consciousness itself as a vehicle for information.   Mental episodes involved in the acquiring of information can be analyzed with respect to their conscious form, understood independently of the information content acquired.   To mathematical information, for example, corresponds mental episodes of thinking about mathematics.   These episodes are temporal but do not involve sense-qualia.   Physical information, however, is acquired through

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episodes which do involve sense-qualia; and the high-level, social and symbolic information involved in something's costing $80, for example, is imparted by mental episodes which may or may not have qualia, but which necessarily involve the use of language.   Above (in note 9) I distinguished between direct and indirect acquaintance with physical information, and argued that this distinction was important to the definition of physical information in the first place.   By contrast, I think it is unimportant how I come to know whether something costs $80.   There is an important difference between knowing something is red by experiencing it as such, which involves red qualia, or indirectly, where there are no red qualia.   A red quale is a canonical indicator of something being red.   I think that there is no equivalent canonical indicator of something costing $80: reading that it does or hearing from someone that it does are equally direct (or indirect), as contrasted to seeing something as red and hearing from some else that it is so.

If this is correct, the information that something costs $80 is not physical information and therefore is not of interest to physicists; the property of costing $80 is one studied by economists, not physicists[89].   The mental episodes involved in grasping this information have their own structure: for

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[89]   It is good to know, from a metaphysical point of view, that (or whether) a property like "costing $80" could be expressed in physical terms, because this would test the notion that economics is (metaphysically) reducible to physics.    But a property-to-property reduction along these lines would be of metaphysical interest alone, and would not tell us anything about the phenomenon of costing $80, unlike an economic explanation for that price (referring to supply and demand, or labor costs, or productivity).   Economic theory would find a meaningful difference between costing $80 and costing $8, say, whereas a physical reduction of such properties would of necessity be a simple application of a general rule for reducing economic properties as a whole.    I could, for example, argue that "cost" involves the sum total of all mental episodes referring to something as a potential or actual item of exchange, which would reduce cost to a psychological property; and then, armed with an adequate theory-to-theory reduction of psychology to physics, continue the reduction further: this amounts to a reduction of

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example, I cannot believe that something costs $80 without attributing the same belief to others, such as the salesperson who will grant me ownership over it if I give her $80.   These mental episodes have a collective intentionality[90], an implicit appeal to other minds, as part of their essential structure.   Such an appeal is also relevant to perceiving properties like being red, insofar as I implicit rely on others to confirm my own perceptual judgments[91], but this is a matter of confirming beliefs that already emanate from experience, not structurally necessary to the experience itself: on the other hand, it is structurally necessary for the experience of the belief that something costs $80 for me to attribute this belief to others.

These phenomenological distinctions, then, accompany and, arguably, provide the basis for metaphysical or "meta-scientific" (in the sense of "meta-disciplinary") distinctions between kinds of properties and kinds of information.   Properties are social if the mental episodes involved in perceiving them necessarily involves collective intentionality and other minds; they are physical if the correlate

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the property *costing X*, where *X* would be "any cost whatsoever", so a property like *costing $80* would be reduced simply by specifying the general reduction to *X = $80*; as an explanation of *why* something costs $80, however, this is purely ad hoc.    It is not a matter of economists studying this property, an application of economic theory; it is nothing more than what a metaphysician would do to convince herself or others that economic properties can, if one so desires, be reduced to physical properties.    Economic properties being ontologically reducible to physical ones does not construe economic properties as of interest to or the proper domain for physics.

[90]   As studied in detail by John Searle in *The Social Construction of Reality*.

[91]   The role of intersubjectivity in confirming perceptual judgment, which is a structural part of this judgment insofar as we experience it presenting objective reality, is studied in detail in the fifth *Cartesian Meditation*; the argument is also touched on in *Experience and Judgment*, pp. 163 and 364; also *Ideas I*, p. 375.

mental episodes canonically involve sense-qualia; they are abstract if they canonically do *not* involve sense-qualia. Through these distinctions the restricted domain of properly *physical* properties, and therefore physical information, is defined. An implicit phenomenological understanding grounds the act of fixing physics as a scientific discipline. Physicists, no less than phenomenologists, make implicit appeal to the human subject seen in a phenomenological way: as a conscious being surrounded by a finite phenomenal horizon of sense-data, affected by local physical influences, occupying a fixed position in space and time and receptive to physical information only insofar as it is available in proximity to this position. The subject understood by physics is not simply a rational agent capable of solving mathematical equations or performing physical experiments. Physics presupposes the affective, phenomenal reality of the human, conscious subject in its fundamental concepts of space and time, matter and energy, spatiotemporal locales and localization, information content and exchange, etc. Physical reality as a distinct kind of reality, the "concreteness" of the physical by with physics differs from an abstract science like mathematics, is defined relative to the affective subject. The distinction of the concrete from the abstract is possible only because concrete properties, unlike abstract ones, appear to my consciousness in the guise of affective qualia: to sense something is red is not only to acquaint myself with a state of affairs, but to experience external reality impinging itself on my consciousness.

Physics, then, makes implicit appeal to the affective subjective in order to demarcate its proper disciplinary region. This was not necessarily true of physics before the modern era. Newton, for example, could still see the role of physics as disclosing the "clockwork universe", and the discovery of the laws of gravitation as "reading the mind of God". A physical theory is fundamental, in Newton's perspective, if it describes a cosmic order on the largest possible scale. The quantum-mechanical definition of a theory being fundamental is almost the opposite: a fundamental theory needs to describe the smallest possible regions of space and time and quanta of matter and energy. Cosmic order, even if it

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includes laws which are valid everywhere, is merely the projection of repeated states of affairs defined on the smallest possible scales: it is the result of local phenomena in one part of the universe resembling local phenomena in other parts. There is no cosmic reason *per se*; there is only resemblance between different spatio-temporal locales. Whereas the idealized human subject for Newton, then, might be the rational agent idealized, capable of infinite knowledge of natural law and cosmic regularity, the idealized human subject of modern physics is the isolated conscious being with its spacetime locale and phenomenal field of awareness—precisely the subjective reality with which phenomenology begins.

Physics presupposes, in addition, that we, as conscious beings, can separate out our experience of external physical reality from our experience of other kinds or aspects of reality, and from other mental episodes. This is manifest in the fact that physics is not mathematics, for example, so that mental episodes of grasping mathematical reality are structurally different than those of grasping mathematical reality; but also in the fact that physics is not sociology, biology, psychology, or economics. These other disciplines mobilize different aspects of my experience of things: biology rests on interacting with other living things, with recognizing them as alive, capable of dying, capable of killing, potentially dangerous, etc. Sociology is rooted in my experience of other people and of the artifacts, tools, cultural objects, texts, etc., which are the product of other minds. The experiences in these cases are canonically interactional and practical. Physics abstracts from biological or sociological properties; it abstracts from the living behavior of living things and the cultural value of the artifact. What physics recognizes as its proper disciplinary concern is the matter out of which all objects are composed, including living things and artifacts as well as the inert things of nature. Physics separates out *matter* from the properties and behavior of things in the world, which is only possible insofar as we have a collection of experiences attuned to the *material existence* of these things separate and apart from their biological or cultural properties. Whereas the experience of these latter properties tends to be interactive and practical, our

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experience of *matter as such* is receptive and affective: we experience matter and energy through sense-qualia, through the raw *thereness* of the material object, which is separate and apart from our practical, functional interactions with high-level physical objects, which are more than mere lumps of matter.

Physics involves the human subject not only as conscious, as conducting rational activity, but also as *self*-conscious, as knowing itself as *affected* by physical reality. Affective consciousness is necessarily self-consciousness; any time I experience an affect I also experience myself as the affected being. When I touch my hand to the table, I experience the phenomenal present of the stuff there, its force and impenetrability, as an affect *happening to me*. In order to experience the physical world as objective, I need to experience myself as a being to whom physical affects happen, and I need to experience this happening itself. All physical experience is also the experience of myself coming in contact with myself again as affective being; this perpetual renewal of my self-awareness, this perpetual coming-in-contact of myself with myself as affected by the world and therefore as something *in* the world, is necessary for my sense of the objectivity *of* the world. Objectivity is metaphysically linked to self-consciousness in the sense that my body, with its sensory capacities in particular, is for me object *par excellence*; the objective is, canonically, the inescapable reality of the affects which happen to and hold me in their power.

Physics demands, then, that we abstract this affective part of consciousness, this experience of the raw thereness of the physical world, from our mental life in general; this is correlate to the distinction, which physics also requires, between the raw matter of the things in the world and their high-level existence as biological objects, cultural objects, and the like. Physics is about the raw materiality of being, just as phenomenology, at least at first, is about the raw awareness of consciousness. Physics is a reductive base for other sciences because it believes that the "raw materiality" is logically prior to the

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further determination of something as a part of chemistry or biology; chemical or biological processes, events, and properties are a kind of superstructure formed out the raw material which is the domain of physics.   By analogy, phenomenology perceives "raw awareness" as the foundation of conscious mental life, from which the other structures of mind can be derived.   I may be engaged in different mental activities, but my consciousness is ever-present, and is the raw material out of which my experience of practical action, or abstract thought, or social participation, is formed.   Both physics and phenomenology, then, are committed to a distinction between a *base*—which they take as their responsibility to investigate, and which is ontologically fundamental—and superstructure, which involves higher-order properties and functional complexes, and which are deferred to other disciplines and theories. Phenomenology leaves the analysis of economic interactions, say, to the economists, while taking for itself the role of analyzing the primordial structures of awareness which ontologically ground such interactions.   Physics, by analogy, leave the analysis of chemical interactions to chemists, granting to themselves the responsibility for analyzing the primordial material reality where, and out of which, chemical interactions occur.

Correlate to this distinction of a base and superstructure at the level of theories, which physics and phenomenology share, we can see also that both disciplines are committed to a distinction between properties and substrata: raw matter (or energy) is the substrate for all physical properties, some of which are studied by physics directly, most of which are deferred to other disciplines.   Raw conscious awareness is the substrata for mental and experiential properties, such as the redness of a quale, some of which are studied by phenomenology; most of which are deferred.   Phenomenology tends to include in its own province properties of experience which have an eidetic aspect, that is, which are experiential manifestations of universals like redness or smoothness.   Phenomenology takes on for itself the role of analyzing how a raw mental episode is a red quale, just as physics takes on for itself the role of analyzing

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how an electron acquires negative charge.   A few primordial properties are including in their respective

domains.   Phenomenology studies those mental properties which have eidetic generality and therefore

are intrinsic to the constitution of objective judgments in general[92].   In general, though, phenomenology

does not study the properties which particular experiences, fragments of consciousness in a unified

conscious field, take on: phenomenology studies what emotion *is* as a part of conscious reality, but it

leaves it for psychologists or sociologists to study what makes an emotion one of shame, or pride, or

anger.

**The property/substrate distinction in physics and phenomenology.**

For the most part, the role of physics and phenomenology is not to analyze properties, but to

define and circumscribe, using a language specifically created to the purpose, the ontological region of

pure substrata distinct from properties and where properties are instantiated.   The language of "pure

substrata" is anticipated in terms like "raw awareness", "raw materiality", "raw matter", and the like.   To

both physics and phenomenology belong the *ontological project of raw substrata*, the description of the

region of physical existence as such where all physical properties occur, or of conscious experience as

such where all properties of experience occur.   It is difficult to find the proper words to express concepts

like raw matter, raw awareness, physicality-as-such, which is why part of this project is terminological:

physics and phenomenology must develop a language for the ontology of the substrate.   Physics and

phenomenology are both committed to a property/substrate distinction, one which is fundamental and

which rests on the authority of an ontological language and theory which has characterized the substrate

as *distinct from* its properties: matter and energy, the "stuff" of quantum strings, is ontologically distinct

from properties like spin and charge; conscious affect and self-awareness, the "stuff" of mental life, is

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92    *Cf. Ideas I*, p. 287.

ontologically distinct from particular qualitative character. The "presence" of a quale in my conscious field is ontologically distinct from its being red or blue: the redness or blueness as such does not *affect* me; the affect is the raw presence of the quale in my phenomenal field. Physics and phenomenology are both *reductive* only in the sense that they enforce this ontological separation of properties from substrata, so that a theory of the substrate logically precedes a theory of high-level properties. Properties are *low-level* to the degree that they follow directly from the theory of the substrata themselves, the way that properties like spin and charge follow directly from the theory of strings insofar and from their mere definition; likewise, properties like redness and smoothness, and "eidetic" properties generally, follow directly from the theory which fixes the definition of conscious experience: an visual experience, for example, must have *some* color attached to it. Because the language and theory which defines what the substrates *are*—the substrate as theorized by physics and by phenomenology—includes room for *some* properties, these properties become the "low-level" properties recognized by the disciplines themselves, whereas others become high-level properties to be deferred to other disciplines. The property/substrate distinction therefore underlies the distinction between high-level and low-level properties; ontological reduction underlies property-to-property reduction and, by extension, theory-to-theory reduction. Physics and phenomenology are both *theories and ontologies of the substrate* which presuppose the existence of other disciplines which study the properties the substrata can instantiate. Neither are complete on their own. Since material bodies can instantiate high-level properties, and since conscious experience can take on properties associated with sociological analysis, economic analysis, and the like, physics cannot claim complete explanatory hold on the realm of the physical, any more than phenomenology can claim complete explanatory authority on the mind. They each are concerned only to separate out those properties, those explanations which science requires, which are high-level and can therefore be left for others. Both seek to limit their own sphere of explanatory responsibility by shuffling off to elsewhere responsibility for "high-level" explanation, which requires identifying where something

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which needs explaining needs high-level explanation, *is* high-level.   They need to identify "markers" of the high-level in their respective domains.   Phenomenology must "know" that shame, say, is a high-level phenomenon of mental life and therefore not its concern; physics must know that life is a high-level property of matter and therefore not its concern.   Both must develop a disciplinary recognition for the complex, for those properties which are due to organization and not to the ontological fixture of the substrata themselves.

# Chapter IV

The previous two chapters began by distinguishing different kinds of reduction and concluded with the property/substrate distinction, which, I argued, is fundamental both to physics and to phenomenology. These ideas offer new avenues of research on the topic of physics in relation to phenomenology: property theory as a language and framework for doing phenomenology; complexity as a criterion for *high-level* properties and the theory of complexity, then, as an extension of property theory, one which enables us to classify properties into the low-level and the high-level; the theory of emergence, which is related to complexity theory but which also applies to phenomenology, via the philosophy of mind, in the idea that consciousness is an emergent property of the brain. I will explore these topics in the next few chapters, starting with the relationship between phenomenology and the theory of properties. First, however, I want to point out that the logical progression just outlined (from *reduction* as a philosophical problem to the property/substrate distinction) to is a reasonable one. Any property theory which aims to give a meaningful theory of substrata, an ontological language through which to talk of the "pure substratum" independent of the properties it instantiates, creates a distinction in theory-types between this theory of the substratum and the theories of different families of properties. Because the substratum instantiates properties, and therefore brings them into existence in the actual world, the theory of the substratum will act as a de facto reductive base for the other theories. Likewise, the reduction of the object, with its full set of properties, to the substrate, where these properties are "bracketed" or ignored, is an ontological reduction of the object to the substrate; it is also, as my language has just suggested, a "bracketing", a setting-aside of the concerns of one theory so as to achieve a more fundamental theory. Physics "brackets" the biological nature of living things so as to treat them as just so much matter, for example: *bracketing* accompanies physical as well as phenomenological reduction.

The search for a reductive base-theory is coextensive with the attempt to ontologically characterize the domain of analysis for a collection of theories. Physics, for example, is a base theory for chemistry and biology, insofar as each of these deal with physical things. It is physics, however, which provides a definition of "physical thing", and which is burdened with the task of making terms like "physical" ontologically meaningful, and not mere rhetorical devices. Theories which take on ontological burdens are also reductive bases for theories which do not. If the theoretical resources of physics is necessary to say what "physical things" are, then it is natural to seek reductions of theories about physical things to physics. By analogy, if set theory is needed to define what numbers are, then mathematics must in some sense reduce to set theory. Mathematics can be seen as the study of mathematical properties—properties like primeness, complexness, transfiniteness, etc. However, before analyzing properties, we have to ontologically demarcate the region of things which can instantiate these properties: what it means to say that the substrata instantiating properties you are interested in exist in the first place. The analogy holds also with respect to phenomenology and the social sciences. These sciences concern properties which apply to human beings as social, personal, self-conscious beings: properties like expectation, freedom, pain, justness, and the like. We appeal to the ontological region of consciousness to define these properties' substrata, and, therefore, phenomenology, as the analysis of conscious itself, serves as a reductive base for theories like economics, sociology, political science, education theory, medicine, etc.[93]

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[93] My inclusion of medicine in this list may seem surprising; but it seems to me that medicine, unlike anatomy, deals with concepts which have an intrinsic phenomenological description: well-being, injury, health, etc. A biologist may define an animal's well-being in terms of its capacity to live for a long time; among humans, however, this term also connotes an *experience* of health, a sense of the body as free from pain, and endowed with the capacity to achieve personal goals (as well as those purely natural goals needed for biological survival).

As I discussed at the end of the last chapter, part of the theoretical project for a base-theory is to understand where its explanatory responsibilities end. Economics or sociology may reduce to phenomenology (for example, economics is the study of economic decisions, and any decision is an event in consciousness); yet phenomenological *explanation* is not economic explanation, and phenomenology need not explain economic behavior. A base theory must know how to "pass" certain explanations on to other theories: how to properly frame them, provide them an ontological foundation, and then leave the explaining itself to high-level theories. This is achieved in the natural sciences through the concepts of complexity and complex organization: chemistry, for example, is the science (in effect) of molecular organization: how atoms for molecules, and how molecules form substances. Physics ontologically frames the objects in question (atoms are collections of electrons and quarks, for example), and then defers to chemistry the analysis of the organization of these collections. Physics studies particles; higher-order theories study the organization of sets of particles. By analogy, set-theory studies sets; mathematics studies how sets are organized (for example, what kinds of operations and relations can be defined on them). Higher-level theories tend to study the organizational patterns of the objects studied, as isolated things, by lower-level theories. This way of defining the relationship between high-level and low-level theories works especially well now that complexity theory itself is a well-developed theory on its own rite. It is useful, then, to apply a similar model of low-level and high-level theories to phenomenology and the social sciences. If phenomenology is the study of individual conscious states, then can we define high-level social sciences as the study of how individual conscious states are organized into complex mental activities and ways of being?

The analogy is imperfect, but, I feel, still rather helpful. Phenomenology offers a provisional, relatively low-level theory of how mental life is organized. Husserl studies the patterns of synthesis which comprise mental events like perceiving simple states of affairs and making simple judgments.

Husserl views the logical form of these mental events as the foundation for logical analysis in general, and therefore pursues the analysis of this logical form in his own logical theory, for example, in the *Formal and Transcendental Logic*. This itself rests upon the phenomenological analysis of judgment as a conscious event, of beliefs as conscious objects: analyses which come to the forefront in the "Phenomenology of the Reason" chapter of *Ideas I*. The proper domain of phenomenology, then, is to analyze how raw awareness logically evolves into positional judgment in general; phenomenology, however, does not analyze distinct *kinds* of judgment, except insofar as they are relevant to this overall evolution. Phenomenology does not study economic judgments as economic, political judgments as political, etc. It studies the overall form of judgment as an event in consciousness, but not the semantic preconditions, the reasons, the classification, for economic or social or aesthetic or cultural judgments.

Our careers as economic subjects, social subjects, political subjects, and the rest demand complex syntheses of conscious states and mental activity. What makes me a social being, for example, is how my behavior over the course of time is organized. Complexity has proved useful in the social sciences just as much as in the natural sciences; under its aegis, sociology is understood as the analysis of the complex organization of social systems; economics as the analysis of economic organization; etc. Complexity theory is the study of organizational structures, which highlights the features of these structures which make them complex, such as functionality and functional roles, and different organizational strata.

By analogy, then, to how physics tries to take explanation just far enough for it to "pass it on" to higher-level theories characterizable in complexity-theoretic terms, phenomenology should conceive its own explanatory role as taking the explanation of mental life just far enough to "pass it on" to the theories which rest on the complex organization of mental life and mental activity. Phenomenology should outline, but not attempt to describe, the patterns of organization which link consciousness as "raw

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awareness" to our mental activities as rational, social, self-conscious, personal beings.

**Phenomenology and Property Theory: Noemata**

To develop the outline just presented of phenomenology's explanatory role, I will use properties and property theory as a general interpretive device for phenomenological ideas, as well as a technical machinery available to phenomenological analysis.   This will involve defining certain phenomenological concepts in property-theoretic terms, namely noemata, or intentional objects, which will be the focus of this section; and *eiden*, essences or experiential universals, which I will discuss in the section that follows.

I will demonstrate my property-theoretic approach to noemata by offering a particular phenomenological analysis or case-study.   This analysis will highlight the distinction between *singular* and *sortal* properties, which I derive largely from the work of Michael Jubien[94].   Sortal properties find their linguistic expression in categorical words like "red" or "cold"; singular properties find linguistic expression in referring expression, either indexical words like "this", or definite descriptions.   Jubien's primary concern[95] is to give a property-theoretic account of the phenomenon of linguistic reference.   To a phrase like "this book", for example, there corresponds the property *being this book*; the sentence "this book is red" can then be read as asserting a coinstantiation of two properties, one singular and one sortal:

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[94]    Using mostly his (), although some of the relevant ideas are also discussed in his ().    With respect to the notion of sortal properties, cf. the former, p. ; to singular properties, or, more precisely, "singular categorials", cf. p. .

[95]    At least in the book just cited.

"that which instantiates the property *being this book* also instantiates the property *being red*". A Jubien-like semantics would look like a graph- or lattice-theoretic representation of sentences, where nodes on the lattice would be properties, and connectors would be property-to-property relations like coinstantiation, necessary coinstantiation, and inclusion[96].

Whereas Jubien develops a property-theoretic semantics, or theory of linguistic reference, a phenomenological application of his ideas would be a theory of mental reference, or intentionality. When I experience this book, I am acquainted with the property *being this book*. As I fix my attention on *this book*, I begin to construct—using my above analogy—a property theoretic "graph" one of whose nodes is the property *being this book*[97]. As I experience further details, I add additional nodes to this graph: being red, being heavy, being authored by Sartre, etc. The synthesis of distinct impressions into one mental picture of the book, which is analyzed in detail in *Experience and Judgment* and elsewhere, can be described my mind creating a coinstantiation network centered on *being this book*. Husserl's analyses of the phenomenological preconditions these syntheses can be described in terms of properties like *being this book*. For example, Husserl argues that I am only able to synthesize distinct impressions into a relatively complete mental picture of the book insofar as I have the awareness, continuous through

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[96] This analogy is my own, but I think it is a fair summary of Jubien's ideas. Note that by "inclusion" I mean that idea that one property is included in another if any instance of one is *necessarily* an instance of the other: for example, the property *being red* includes the property *being colored*. Necessary coinstantiation implies that two properties overlap: the properties are included in each other, or, if they are referring properties, they refer to the same thing.

[97] By convention, I will use underlined italicized text to represent properties, and leave out the phrase "the property" or "the property of": so *being red* should be red as: "the property (of) *being red*".

the mental episodes where I perceive the book, that the book perceived at different times is the same book; that the book's identity is held steady through a continuity of perceptions. As I perceive new details, I remember (technically, *retain*) previous ones perceived; in addition, I anticipate (*protend*) further experiences of the book which I am prepared to add to the picture I already have. The theory of retention and protention, then, can be described as studying how the property *being this book* becomes part of my mental states: any time I am aware of something instantiating this property, I also "register" this property with my powers of protention and retention, and with a particular protential and retentional sequence through which further properties make my acquaintance as being coinstantiated with *being this book*.

Consider now a more complete example. I know that during winter months ice sculptures are to be found in a certain park and I walk toward that park to see them. I know in advance that there will be some entities with the property of being ice-sculptures. This predisposes me to perceive ice sculptures as such; if it were summer, I would not interpret a relatively transparent sculpture as an ice sculpture; I would presumably assume it made of glass. As I walk toward the park I casually observe buildings, trees, people, etc. I expect there to be things instantiating properties like being a tree, being a person, being a building. It takes merely a moment to progress from some minimal sensory clue to a recognition of a tree, say; I see a patch of green and immediately recognize a tree. I am predisposed, that is, to jump from a property like "being green" to a property like "being a tree"; since greenness is likely coinstantiated with treeness in this context, it takes me but a moment to recognize a certain instance of this coinstantiation once I have recognized an instance of one of the two properties. Likewise for ice-sculpture-ness. Out of the corner of my eye or in the distance I perceive a property which is likely coinstantiated with being an ice sculpture: being semi-transparent, say, or being life-size, or being worked on by a sculptor wearing gloves. Since I am predisposed in context to assume "being

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semi-transparent" as coinstantiated with "being an ice sculpture", when I see something which is semi-transparent, I assume provisionally that it has the property "being an ice-sculpture". Now suppose I see an ice-scuplture and decide to walk up and examine it. I am not only dealing here with the property of "being *an* ice-sculpture"; since my immediate future course of action is oriented to *this particular* ice-sculpture, given that it is now the focus of my attention, I am now concerned with the property "being *this particular* ice sculpture". In other words, I am concerned with what properties are coinstanted with "being *this particular* ice sculpture". In other words, the idea of fixing attention on something (on a noema) and seeking to gather information about it, seeking to synthesize more and more details with the noema as a ground of synthesis, can be expressed in terms of properties as trying to find a larger and larger set of properties coinstantiated with "being *this*..."; e.g., "being *this* ice-sculpture". Another way of saying this is that consciousness has at its disposal a perpetual "raw indexical", a generalized *this* which refers to different objects at different times, and the referent changes each time my attention is shifted from one place to another. But my experiences perpetually presents to me further properties which I understand as coinstianted with *being this*, where *this* represents whatever is the focus of my attention at any one moment in time. The property *being this* is therefore a ground of synthesis around which a coinstantiation network "forms" like a snowflake upon a speck of dust.

As I direct attention to particular focal point, it is inevitable that certain properties will come to me awareness, even if I am not (for the moment) interested in them. Suppose, for example, that I search out a red book on a shelf. I scan the covers or spines of different books, looking for the red one. I will perceptually review a number of distinct spatial regions, each individuated by their color. Unless their color is red, I am not interested in what color they are; nonetheless, they will have *some* color, and, at some level of awareness, I will notice this color. Some properties (*being yellow*, *being black*, etc.) are passively noticed in the course of carving perceptual space into discrete units, even if I do not attend to

these properties.   At some point, however, the property which will thus be of only secondary importance, used merely to individuate a particular book, will also become of primary importance: I will notice that one particular book is red.   The color property now becomes something I am directly aware of.   I individuate the book, I conceive the property _being this book_, by virtue of some sortal properties which serve as "markers".   Even when I am only concerned with properties like _being this book_, then _being this other book_, etc., I can notice these properties only by observing a certain provisional property network: this book is yellow, this other book is black, etc.   Observing these networks is a perceptually necessary part of observing instances of _being this book_.   Still, those networks occupy my attention only indirectly or passively; I do not actively _thematize_ these other properties which I passively notice, until I find the book I am looking for.   Then a more complete property-network leaps to my attention: my awareness encompasses a full graph of property relations centered on _being this book_, some of which permit my reaching out and taking it.

So, even though referential properties like _being this book_ are useful as models for intentional states, we cannot analyze these properties as they occur in mental life without analyzing sortal properties, like _being red_, which are the fundamental units of perception.

**Sortal properties and perceptual qualities.**

Perceptual qualities like _red_ or _smooth_ are canonical examples of sortal properties like _being red_ and _being smooth_.   A property like red can be instantiated both by objects and by qualia; as a result, these properties define a mind-to-world bridge: I infer that something is red because I experience a red sensation when looking at it.   I form _beliefs_ about the world by "transferring" properties of experience to properties of objects of experience; I believe that the object instantiates (some of) the same properties which my experience of it instantiates.

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One precedent to this analysis—although one which does not use properties per se—can be found in David Woodruff Smith and Ronald MacIntyre (1982), and specifically their "adverbial" description of conscious states. The idea here is that the *content* of mental states can be considered as *modifications of our experiencing-in-general*, of experience itself. Their example is my seeing a black crow, which is really "my seeing *black-crow-ly*". The noun, "black crow", becomes an adverb, "black-crow-ly". They use this as a way to interpret Husserl's theory of essence or meaning, or *eidetic* phenomenology. Essences are modifications, or qualifications, of acts of experiencing. Through experience, I acquire insight into some of the properties which things in the world can instantiate. Because I experience sensations of red, of heat, of a smooth surface, I am led to presume that these properties are also features of the perceived world: that *things* are red, smooth, hot, etc. Properties of experience are a guide to properties found out there in the world.

So there is a phenomenological origin for the properties which we are prepared to hold as belonging to things in the world. This is particularly important when the properties in question are emergent. Emergent properties are instantiated only by sufficiently large and complex samples or systems of material. They cannot necessarily be inferred from mathematical description of small parts. How, then, do we know that complex things are instantiating emergent properties in the first place? How do we know that these properties are there in the first place? The obvious answer is that we *perceive* these properties. Although they may be emergent—and therefore complex—from the viewpoint of physics and of scientific explanation—we do not necessarily *perceive* them as complex. The transparency of a pane of glass is *perceptually* simple, even if it *physically* complex and emergent.

Properties can be perceptually simple without *actually* being simple because our perception is itself an emergent property of our nervous system or our physical bodies. We, ourselves, are high-level, complex entities. Therefore, our minds are attuned to the high-level, complex order of the world around

us: they are attuned to the kind of complex properties which complex objects instantiate.   We do not "see" the world at the level of the reductive base (if we accept that one exists); at the level of simple objects.   We are not in the position of scientists who can see a large collection of simple objects but can only guess as to the nature of their interactional patterns.   Because we see the world from a high-level vantage point, we have perceptual acquaintance with many of the high-level patterns which are significant in macroscopic reality.   In a complex system—for example, a large collection of fundamental particles—there may be a vast number of ways the system might be organized.   There may at any given moment be a large number of patterns that can be found within the system.   It might be difficult, in the abstract, to discern which organizational structures can occur in nature, or which among the patterns that are part of one organization are significant or causally efficacious at higher levels.   We, however, are capable of making these judgments, because we tend to observe those high-level patterns which *are* significant and which *can* exist.   The organizational structures we find are the ones which occur among objects we encounter; the organizational patterns which we tend to explore are those which have high-level effects in the sense of causing high-level properties, such as *being smooth* or *being transparent*, to be instantiated.

What Husserl calls "eidetic analysis", then, can be construed as our exploration of high-level properties and their interactions, in a world in which property-to-property relations at the high level cannot necessarily be discovered from analysis of lower levels alone.   Something which is red cannot be transparent; a sound cannot have a color.   Some of these relationships might doubtless be predictable, or at least expressible, on low-level terms alone; but the formation of a low-level theory occur on the basis of a provisional understanding of the high-level reality which emerges within it, and our knowledge of this high-level reality guides the progress of the low-level theory.   For example, the physical explanation of why things are transparent, or are red, makes it obvious why they cannot be both at once.   However,

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our physical theory about what light is and how it works probably would never have developed without the kind of "folk wisdom" about light, about the provisional understanding of light which is part of perceptual ability, and which includes rules such as that red things cannot be transparent.   Eidetic insight into the way high-level properties work sets the stage for science because it provides a picture of high-level reality: low-level theory is constrained by the need to accommodate the fact that *this* high-level reality around us, this life-world, as opposed to some other, is the world which emerges.

When seen through the lens of emergent properties, most of Husserl's eidetic analysis can be expressed as the analysis of high-level properties which are *perceptually* or *experientially* simple, even if they are physically complex.   On the other hand, we also observe and think about many properties which are complex even at the macroscopic level.   We see complex systems around us: a subway train, a building, a living thing.   Whereas perceptually simple properties (including emergent properties), such as *being red*, are *dependent moments* of their objects, complex systems are composed of smaller parts which we can *perceive* as potentially separated from the larger system; these are *independent* moments. Husserl's distinction between dependent and independent moments, sketched out in the *Logical Investigations*, is therefore a useful corollary to the theory of emergent properties when we make the further distinction between   emergent properties which are perceptually simply or complex[98].

In addition, the environment itself is a complex system.   Unlike, say, a subway train, the environment around me cannot be apprehended on one level as a single object, with many independent moments or parts.   However, objects in the environment join to form the environment as a whole much as parts join to form a complex object.   At any given time, my immediate environment can itself be modeled as a property network, obviously a very large one.   Indeed, such models are used by

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[98]   For more on this distinction, see Sokolowski, p. , and Woodruff Smith, p.

"intelligent" computer programs that can perform tasks in or answer questions about their environment.

In terms of properties and property-networks, then, I have identified the following:

- Indexical properties of intentional states: _being this book_, etc.;

- Sortal, perceptually simple properties like _being red_;

- Simple property networks connecting properties of these two kinds: *this book is red*;

- Complex intended objects, with independent parts as well as dependent moments;

- Property networks which describe these perceptually complex objects, and the relationships among their parts, as well as describe properties of these objects in themselves; and

- Property networks which describe the environment as a whole.

Phenomenological concepts such as protention and retention can also be expressed in terms of property networks: as I continue to study or fix attention on an intended object, I anticipate (protend) further properties, on the basis of properties I have already observed (and retain in memory); the lattice of properties attributed to the objects constantly changes. I implicitly assume some properties to hold (which can be modeled as a special kind of "provisional" node on a property-lattice) and further investigation can cause these assumptions to be confirmed or disconfirmed, causing those special nodes to either be removed from the lattice completely or converted to ordinary ones.

In addition, there are occasions when we are poised between two quite different pictures of a given object, not sure which one of them is accurate. An example due to Husserl is when we cannot tell

if a figure seen in a store window is a mannequin or a person[99].   In this case we have two very different property lattices present in our minds, most of whose "nodes" are of the special, provisional kind: if the figure is a man, it will also be mobile, likely to speak, etc.; if a mannequin, it will remain rigid, it will not respond to any of my movements, it will look, on closer examination, like plastic rather than like human skin.   Both networks are present in my mind, and I look for a little clue, one telltale observed property—for example, the figure's moving slightly—which will confirm one picture or another, and all of the properties which form nodes of the now confirmed network rush to my attention as protended and anticipated.   For example, once I see the figure move, I anticipate that he will make further movements.

This discussion has argued for property-networks as models for our perceptual, operational environment; but they can also model beliefs held outside the context of perception: beliefs which form the horizon or background of our rational activity in general, and also beliefs about things, such as fictional objects, which are necessarily non-perceptual.   The analyses which result offer some simplifications which demonstrate the versatility of property theory as applied to problems in phenomenology and the modeling of beliefs and mental states; I will now discuss some of them.

**Property-networks and the structure of beliefs and judgments.**

Recall that a simple statement, such as *this book is red*, can be analyzed as a simple property graph: the nodes are _being this book_ and _being red_; the relation between them is coinstantiation: in writing, "the property _being this book_ is coinstantiated with the property _being red_".   This analysis may seem merely to complicate a very simple expression, but its usefulness becomes evident if we consider what happens if the book in question is fictional, or somehow incompletely specified.   Actually, I will

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[99]    *Cf. Experience and Judgment,*

shift to a different example, based on one discussed by David Woodruff Smith and Ronald MacIntyre[100].

Consider, then, a shopkeeper anticipating her $1000^{th}$ customer. She says, "I believe my $1000^{th}$ customer will come into the story today". The question is, what relationship exists between her and this $1000^{th}$ customer? Once there *is* a $1000^{th}$ customer, then she intends him like any other perceptual present object. Until that time, however, this *hypothetical* customer exists only in her mind. What is the ontological status of the entity referred to by the phrase "my $1000^{th}$ customer" before this customer actually exists? One could perhaps read "my $1000^{th}$ customer" as a definite description. This is certainly debatable, however, since at the time of utterance the phrase does not refer to anything at all; moreover, it is hardly a *definite* description, since anyone on the planet could conceivably be her $1000^{th}$ customer. Once it *does* refer to someone, of course, then it *is* a definite description. But the "promise" of being definite does not explain exactly how such "future definite" descriptions actually work in meaningful sentences. Smith and MacIntyre develop a rather complicated "phenomenological semantics" to deal with cases like these. The central point in their theory is to follow Husserl in rejecting Brentanian and Meinongian treatments of "my $1000^{th}$ customer" as referring to some special kind of indeterminate object, and adopting a more Husserlian interpretation of "my $1000^{th}$ customer" as a *meaning*, a *sense* currently lacking a *reference*. Although their reading strikes me as accurate, it can be simplified. Using properties, "my $1000^{th}$ customer will come into the store today" can be read as asserting a coinstantiation between *being my $1000^{th}$ customer* and *coming into the store today*. This coinstantiation can be asserted whether or not either property is *currently* instantiated. The properties being instantiated, or not, is an in issue independent of the structure of a property-network whose connector is coinstantiation. Of course, the coinstantiation claim will be proven false if one property is

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instantiated and the other not; but until then, the meaning of the statement needs to be regarded as a claim about *properties*, not about the things which instantiate them.   The subject of the claim is the *property being my 1000$^{th}$ customer*; it is some *thing* which instantiates that property, because, at the time the claim is made, no such thing exists.

This reading can also be applied to fictional objects, and other objects which are imperfectly specified.   The techniques for using property theory in this area were developed by Michael Jubien in his ().   For example, the assertion that Natasha Phillipovna (henceforth NP) was Russian is read as: "*being NP* is coinstantiated with *being Russian*".   Again, NP's being instantiated, or not, is irrelevant to the meaning of the sentence.   In a work of fiction, many of the identity properties associated with characters and places (properties like *being X*, where *X* is an object in the story) will be uninstantiated.   There are some exceptions: many places and characters in fictional stories are nonetheless real.   As Jubien argues, when the city of Chicago, say, appears in a story—even if the author takes some poetic license with the city, if the city in the story is not identical to the "real" Chicago—we should still read "Chicago" as referring to the real city; i.e., we should read *being Chicago* as instantiated by the real Chicago.   Some properties in fictional contexts, in other words, are instantiated by real-world things.   On the other hand, if a city in a story happens to be called "Chicago", but seems quite different from the real city, then we might prefer to read the story as if the city in question exists only in fictional "space", and its "identity-property" as uninstantiated.   As Jubien argues, this is something of a judgment call, and there is no clear line differentiating cases when we read fictional entities as referring to real ones or as wholly fictional.

The ease with which Jubien interprets the semantics of fictional and other special contexts, where there are ontological puzzles surrounding referenced entities, advertises for Jubien's property-theoretic approach to meaning and reference.   Jubien's own primary motivation is to address problems in the

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metaphysics of modality, problems such as our intuition that Descartes could have lived for 50 years:

For a more detailed example,

By analyzing the structure of statements or beliefs in terms of relations between properties, Jubien can avoid problems which occur when we become preoccupied with the objects which instantiate those properties.   This applies not only to cases where these instantiators do not exist or do not currently exist.   Many expressions in language refer to physical objects: to take several of Jubien's examples, Descartes, the *Pieta*, and a Chateau.   As physical objects, they are "nothing more" than an accumulation of matter. So, for example, the *Pieta* could have been a cubical lump of clay.   *Pieta*, though, is a statue; as such, the sentence "*Pieta* could have been a lump of clay" seems incorrect.   A typical way around this problem is to distinguish *de re* from *de dicto* readings of "*Pieta*".   As a *de re* reference, "*Pieta*" would refer to whatever clay happened to have been used build it, and this clay, certainly, could still be a cube. Perhaps Michelangelo had two cubes of clay in the studio when he began his work, and selected one of them more or less at random.   Imagine that the other cube was never used; to this day, it is still a cube. Label these two cubes A and B.   If A was the one chosen to make *Pieta*, and if "*Pieta*" is read, *de re*, as referring to A, then certainly *Pieta* could be a cube, because A could easily not have been chosen. Conversely, if "*Pieta*" is read *de dicto*, then "*Pieta*" refers to A only because it was in fact chosen; had B been chosen instead, then "*Pieta*", read *de dicto*, would refer to B instead.   In other words, read *de dicto*, "*Pieta*" will refer to "whichever lump of clay happened to be used to make (the statue) *Pieta*", and so, *de dicto*, "*Pieta*" will necessary refer to a statue, and not a mere lump of clay: it could *not* be a cube.

Jubien replaces this *de dicto*/*de re* distinction with a distinction between properties and substrates, which works in similar ways but is arguably more elegant.   We can read "*Pieta*" as referring to whatever

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instantiates the property *being Pieta*, which is equivalent to the *de re* reading; or, we can read it in association with the property *being Pieta* itself, which is equivalent to the *de dicto* reading. Take the sentence "*Pieta* could have been a cube". If we read this as: "The property *being Pieta* could have been coinstantiated with the property *being a cube*", then this is clearly false; if we read it as "That which instantiates the property *being Pieta* could have instantiated the property *being a cube*", then this is true. The *de re*/*de dicto* distinction is translated into a distinction between, when modeling a sentence as a property graph, translating a referring expression to a *property* or to a property's instantiator.

This model is also useful in the context of phenomenology, for example, for analyzing propositional attitudes in place of sentences. We can imagine someone looking at the *Pieta* and musing about its construction. Perhaps he tries to imagine an unformed lump of clay at the start of the process—impressed by the skill displayed in shaping this clay into a beautiful statue. In this case his mind is directed at the clay itself. On the other hand, perhaps he is comparing the statue to others he has seen. In this case his mind is directed at the statue as an aesthetic object. Or, perhaps he has been hired to protect *Pieta* from damage. Perhaps then he looks closely at *Pieta* for areas where the clay has begun to chip or erode. Then, again, he is looking at it as a lump of clay. The mind seems to be directed in different directions depending on context—toward the statue as an aesthetic object, or as a purely physical object. Mark Heller, whose analysis helped inspire Jubien's alternative theory, argued that there are actually two objects involved: a lump of clay, and a "conventional object", which in this case would be the "aesthetic" *Pieta*.[101] Jubien argues that there are not really two "objects" here: there is only one object, the "physical" object, and also a property, *being Pieta*. *Pieta* in the aesthetic sense is not a different "object", but a property or "meaning". This agrees with Husserl, for whom the constituents of

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judgments are not necessarily objects themselves, but meanings or essences.   I can think about things

which have, and which do not have, spatiotemporal existence; about things which are phenomenally

present to me at the point in time when I think about them, and things which do not.   There are many

different kinds of "intentional relations" which my mind can enter into *vis-a-vis* objects of thought.   In

analyzing the structure of beliefs, however, Husserl tries to look beyond these different intentional modes.

For any object of thought, there is a correlated "meaning", the *idea* of that object, and most judgments

about intended objects (noemata) involve linking this meaning to other meanings or essences.   I have

modeled this via property-networks; the important point here, though, is that the *structure of judgment* is

largely independent from the actual mode of intention which I entertain toward the noema.   Husserl is

able to separate the analysis of *perception*, of how objects enter my awareness and become objects of

thoughts through the medium of perceptual awareness, from the analysis of *judgment*, which concerns

objects that have come to my attention irrespective of how they have so: through perception, abstract

thought, memory, etc.

Rejecting the notion of "conventional objects", Jubien argues that terms which refer to physical

things refer *only* to physical matter, and analyzes seemingly high-level or "context-dependent" aspects of

reference, such as referring to statues and other "cultural" objects, in terms of properties.   Jubien backs

this up with a materialist ontology he refers to as "M" theory, whose essential point is that physical things

are (nothing but) mereological sums of points of "stuff"[102].   All the high-level complexity of the world is

a product of properties or, as I would put it, property-networks.   If we imagine the world in Jubien's

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[102]   "Mereological sum" meaning a collection of (potentially disconnected) points; and "point of stuff" is more

accurately points of space which contain "stuff", although we can just as well read this as "particles".   *Cf.* Jubien ,

p. .

terms, then, we need to imagine the following: the world around is a region of stuff extended in different ways in space and time; among this stuff, however, emerge many different properties, many of which link up into orders and situations. Jubien implies a weak form of emergentism, because these properties are not new *objects*; objects, by definition, are just bits of matter. Nothing is added *ontologically* to the world as these various properties which material things take on emerge. Nonetheless, it is consistent with Jubien's ideas to *use* emergence as a way of explaining how the environing world acquires its complexity and richness. The world around us is, ontologically, a world of matter; but we are attuned to the properties emerging within that matter, and in observing these properties our minds recognize meanings within the world, meanings which are synthesized to form judgments and propositional attitudes. We are situated in a "lifeworld" of emergent properties, are attuned to patterns of high-level reality. The judgments we form about the world reflect its high-level structure. What Husserl calls "apophantic analysis"—analysis of the structure of judgment—is also analysis of emergent patterns in the life-world. Husserl considers the "structure of judgment" to be the true topic of logic—not only mathematical and other formalized judgments, but also the informal judgments of everyday life. Logic, understood broadly, is the science of human judgment in the empirical, everyday world. Logic is the study of the mind as it models empirical nature. This broad view of logic is analogous to the broad view of mathematics one can find within emergence and complexity theory: mathematics as the structure of models of nature, even when these models do not fit within traditional mathematical idealization. Mathematics must accommodate the complexity and imperfection of nature, which it does by simulating as well as calculating. The mathematics of complexity theory bears this philosophical relation to the logic of Husserl, in that both try to liberalize formal disciplines to fit the informality of the high-level, everyday world[103].

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**Phenomenology and Emergent Properties.**


      Just as the environment around us can be understood as a network of emergent properties, the concept of "emergent properties" has often been used to explain consciousness itself.   If physical doctrine holds that all matter is composed of certain elementary particles—quarks and electrons, for example—and that all properties of material beings can be explained by properties of these particles, then it is hard to see how matter can think and feel, and how phenomenal properties like "being red" can be material properties.   The emergentist's response is that no single particle, nor a single molecule or a single nerve cell, is itself conscious.   Consciousness is a complex behavior of matter, one that is only observed when the matter in question is sufficient complex, complex in the sense of having many parts with elaborate interactional patterns between them.   There are, after all, billions of nerve cells in the brain.


      The bridge between emergence theory and phenomenology—such as we might see it in Searle's work, for example[104]—is usually based on the idea of consciousness or properties of conscious experience (e.g., qualitative properties like *being red*) as emergent properties of the nervous system.   In this chapter I have explored a different space of convergence between these two philosophies, one which concerns not consciousness itself but instead the world, or, more precisely, the objects and properties which are phenomenologically present to consciousness.   I contend that phenomenology and emergence theory can develop a symbiotic relationship.   Each addresses concerns which are underanalyzed or conceptual gaps in the other.   This is true in both directions, as I will now argue.

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[104]    Searle offers effectively phenomenological theories of intentionality in *Intentionality* and in *The Structure of Social Reality*, and elsewhere (e.g., in *Mind* and in *The Mystery of Consciousness*), a qualia-realist position philosophy of mind which is not phenomenological *per se* but is consistent with phenomenology.   *Mind, Langauge, and Society*(Basic Books: New York, 1998), however, merges these into one theory.

First, emergence theory offers us a new account of identity and of individuation: a new theory of natural kinds, and of how properties inhere in substrata.   In this account, concepts describe not different kinds of *substances*, but rather different behavioral patterns, or propensities to behaviors.   If I hold in my hand a sugar cube, there is, in this new paradigm, certainly some material entity or system present to my consciousness; certainly a material interaction between it and myself.   But the details which individuate this entity not just as some matter, but *qua sugar cube*, inhere only indirectly or elusively in this matter: they are behavioral dispositions to be revealed over time, or emergent properties whose existence are by definition rather nebulous and imprecise.   Instead of the straightforward claim that *there is* a sugar cube there, we have a more nuanced situation in which there is *matter* there, and this matter has propensities or emergent properties which permit it to be further characterized as a sugar cube.   The logical distinction between the matter itself and these properties and propensities needs to be honored in the various theories we use to describe our experiencing, talking about, and making judgments about the sugar cube.   Apparently simple states of affairs involving the sugar cube—say, that it rests on the ceramic dish—reveal deep complexities.   Such a state of affairs describes an order or structure whose component parts—here, a sugar cube and a ceramic dish—are, *within this structure*, simple parts.   They serve in this order as "logical atoms".   And yet complexity theory tells us that this very logical simplicity emerges from a complex underlying system: it is something which must be analyzed, rather than assumed as a precondition for analysis.   For each element that appears as a logical atom in a state of affairs, a linguistic expression, or a conscious judgment, we need to assume that this logical individuality is itself a structural *effect* of an ontologically more primitive order.   Our theories of states of affairs, linguistic expression, and conscious judgments need to be changed accordingly.   I will argue here that theories based on phenomenology are able to able to do just that.

The fundamental premise of complexity theory might be expressed as follows: suppose we have a "high-level" object, an object mereologically composed of lower-level parts.   Any mereological sum is an *individual* in an abstract, set-theoretical sense, but let us agree to refer to a high-level object as a *high-level* individual only if there is a state of affairs or causal interaction

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in which this individual is a singular entity.   If it is true, say, that the sugar cube is on the ceramic dish, then this state of affairs demonstrates the individuality of the cube and the dish. So complexity theory asserts the following: the fact that a certain high-level system is an *individual* is itself the effect of a lower-level system.   It is a feature of this system that its structure includes the existence of higher-level individuals.   Consider weather.   Weather patterns are so structured that there exist objects constituted and individuated within these patterns that we can refer to, categorize, and nominalize, such as gusts of wind, hurricanes, and raindrops.   The individuality of these objects is a feature of the underlying structure.   This structure can only be accurately described by introducing into our description language terms to refer to the higher-level objects.   Some structures can be described in purely topological or mathematical terms.   Others require a higher-level language: a geologist mapping water resources needs a language which includes, not only water molecules, but also lakes and rivers. The distributional structure of water across the land needs this higher-level set of terms to be accurately described.

So the individuality of macroscopic objects is a feature of microscopic structure.   This individuality is itself an emergent property.   But this contains a hidden problem.   Suppose I develop an emergent description of the properties of this sugar cube.   That is, I begin with the sugar cube, and then seek to use the techniques of emergence theory to explain it.   The problem is that this seems to presuppose the very individuality which I claim exists only on the basis of emergent structure.   Since I am acquainted with the individuality before I know anything about the emergent structure, this calls into question the doctrine that individuality itself is an emergent property.   The example I have given concerns one single object, but it also applies to theories of phenomena or categories.   Suppose I use complexity theory to explain how the first living cells evolved, given proteins and other organic molecules in primordial seas.   Here I begin with a phenomenon, and try to explain it as an emergent structure. The problem can also be expressed as follows: there are many different emergent phenomena in the universe.   Why are certain ones of interest to us?   Why do certain high-level structure qualify for us as individuals?   Why do certain emergent patterns found their own scientific disciplines, like biology?   Taken to its

logical conclusion, emergence theory seems to entail nominalism. No two biological objects—whether cells or entire organisms—have exactly the same emergent description; i.e., no two emerge from the lower-level system of organic molecules exactly the same day. So what, precisely, qualifies constitutes the self-contained field of biology? What beyond mere resemblance between different cells or different organisms makes them instances of a distinct natural phenomenon, namely, life?

My point is not that emergence theory does lead down the path to nominalism; it is rather that if we are committed to emergence theory *without* nominalism we need to develop philosophical theories which are sensitive to the metaphysical positions and challenges presented by emergence theory. We need to theorize, in effect, how emergent objects function as discrete individual beings in language, in states of affairs, and in human practical and rational activity; and also how emergent phenomena, such as life, give rise to discrete and individuated concepts. A lot of this philosophical demand can be fulfilled with a theory of intentional relations between consciousness and emergent phenomena. No matter how complex their underlying structure, higher-level objects are present to my consciousness as simple individuals, insofar as I direct attention to them as opposed to any of their parts. Since my consciousness is itself an emergent system, it is not surprising that I do not perceive the emergent complexity macroscopic objects which appear to me as singular. The world which consciousness perceives is a static, discrete world. Consciousness deals with objects as singular topics of attention or targets of reference: as a world of *this*es. According to emergence theory, this static individuality is an illusion. Yet emergence theory itself can explain where this illusion comes from. The perception of static individuals is an emergent property of my consciousness. The illusion of static individuality is an effect of the relative poverty of my perceptual mechanisms. I cannot, after all, see atoms or molecules. But this very poverty is something of a benefit, because it makes consciousness a source of evidence for high-level patterns and distinctions. The fact that I experience living things as different in some fundamental way from stones is reasonable evidence that the properties of living things and the laws which govern their tendencies are fundamentally different. Consciousness gives us a provisional map of the different *sorts* of emergent patterns

operative in the macroscopic world, a map which science can then refine or modify as needed. But here emergent science is situated in a scientific terrain which has already been provisionally mapped by consciousness, and, at the technical level, by phenomenology; this is in effect the role which Husserl granted to phenomenology in works like the *Crisis*.   Phenomenology can explain how emergent phenomena enter into the space of language and reason, both of which presuppose the static individuality of their component parts.

**Antiteleology and phenomenological subjectivity.**

Having argued that phenomenology can be the basis of a philosophical extension or completion of emergence theory, I will now argue in the other direction: that emergence theory in one crucial respect completes phenomenology.   The phenomenological method, presupposing introspective analysis, assumes not only that I have first-person access to my own mind, but that I can make normative observations about the structure and feel of mental reality, and gather these observations into a philosophical discipline with scientific protentions.   It is important to emphasize that the introspection involved here necessarily involves the *subjective* or *qualitative* dimension of consciousness.   There are introspective analyses which yield results that have nothing to do with phenomenology.   I could, for example, by introspecting on my instinctive procedures for deductive reasoning, develop a kind of formal logic.   Phenomenology, however, demands that introspective analysis include all of consciousness, that it engage experience as such.   I do not only analyze mind as cognitive structure, or myself as rational agent or reasoning being. Phenomenology presupposes that I have first-person access to my experiences not only as elements in a rational process, but as experiential presences affecting my consciousness.

Husserl does assume that any conscious experience involves rational analysis either explicitly or implicitly; I am constantly making judgments or inferring factual condition.   Some

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judgment is implicit in any act of perceiving.   I always perceive something as being a certain way.   It is possible to reconstruct any conscious experience as a structure in which any experiential content has a particular role in the emergence of these judgments.   As I argued in Chapter I, however, there is more to consciousness than rational activity; that the contents of conscious experience have an existence which is not captured by this rational reconstruction. Phenomenology is committed to the introspective analysis of ourselves as subjective as well as rational beings.   We do not only analyze our rational activity; we analyze consciousness in all its subjective detail.   It is assumed, therefore, that I can make normative observations about my own subjective experience.   I can certainly observe normative patterns about my rational activity; whole classes of deductive judgments can be described as instances of particular syllogistic forms.   But phenomenology assumes that there is something similarly normative and generalizeable within experience qua subjective.   Necessarily, it is assumed that I can take particular subjective experiences as exemplifications of subjective reality in general and vehicles for further analysis.   It is assumed that there is a faculty within my consciousness for taking prior conscious experience, holding it present in my mind, and referring to it as *this particular* experience.   Conscious experience, or its qualitative parts, is presumed to have an *indexical structure* in the sense that I can single out individual experiences or parts from my stream of consciousness and refer to them as particulars.   This "reference" is presumed to be prelinguistic, not a matter of my *talking about* a certain quale, but actually *experiencing* the quale as a *this*, a kind of private referring act between my consciousness as a whole and one of its parts or moments.   This referential structure is presumed to exist in consciousness as an *a priori* fact; it is something which, for phenomenology, we observe as soon as we have conscious experience at all.   The fact that consciousness has this faculty of reference is what Husserl would call an eidetic certainly, or what in a more Kantian dialect we could call a transcendental given.

Phenomenology, then, is committed to an ontologically distinct class of subjective entities.   These are entities which are entered into the space of logical reasoning, into our conceptions of what exists in the world, in a manner different from "ordinary" physical things. Most objects are permitted into our ontology inferentially or inductively.   I walk into a darkened

hotel room and I think I see a picture above the bed.  It may just be a shadow.  As I turn on the lights and move to get a closer view, my initial perceptions are confirmed or disconfirmed.  The existence of external objects is posited as a working hypothesis, subject to revision if needed. We assume that something exists when this assumption best explains observed data.  When introducing an object into our ontology, then, we ask the following: what observations are explained by taking this object as existing or not existing?  The same comments apply not only to individual objects but *kinds* of objects: we believe in objects of the kind *electron*, *dinosaur*, etc.  We induce the existence of these kinds from a body of evidence.  The criteria for including qualia into our ontological framework, however, are different.  We do not *induce* the existence of qualia.  Admittedly, I can induce that you have a headache from your actions.  I induce the existence of *your* headache.  But phenomenology asserts that qualia have a *presentative* structure within my consciousness which is not a matter of induction: I do not *infer* that a quale exists; when I say that a quale does exist I am merely naming a *presence* of the quale within my field of awareness.  "Existence" is merely a name we give to qualia's *presence*.  Qualia's place in our ontology depends, then, on this "presence in the first-person"; and phenomenology must therefore provide the ontological details of this presence, explain how "presence in the first-person" is a coherent foundation on which to assert the existence of certain entities, entities which we cannot in general directly perceive, which must be entered into the ledger of public reason even though they are by nature private to individual consciousness.

There have been several attempts to provide a criteriology of this ontological structure, to explain how qualia *work* as private objects in the world of public reason.  I don't think that any such ontological analysis has been completely successful, but, as I will show in Chapter VII, completing this analysis was seen by Husserl's followers as a key step in completing his overall philosophical project.  The various "subjective ontologies" offered both by phenomenologists and by analytic philosophers of mind implicitly share one crucial assumption: that the only way to provide an existential criterion for qualia is to base this criterion on presence-to-consciousness as the sole evidence for the existence of qualia.  In other words, qualia cannot be assumed to exist relative to observed behavioral patterns, or to instances of rational deduction.  Any attempt

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to individuate qualia, or to offer evidence of their existence, based on some criterion *other than* presence to consciousness would end up construing the ontological region of qualia too broadly. The uniquely first-person or subjective aspect of qualia would be lost. In other words, a formal analysis of "subjective ontology" must begin with consciousness taking particular qualia as exemplifications of subjective reality, by seizing consciousness's ability to refer to its own experiences as *this*, and then generalize this indexical identification of particular subjective existences into an ontological theory of subjectivity as such.

Next chapter I will argue that this particular strategy, this attempt to develop a formal ontology of subjective existences, makes implicit assumptions both about the nature of qualia and the mind, and also about the nature of the physical universe. This might be counter-intuitive, because our stance vis-à-vis subjective existences may seem unrelated to any position taken vis-à-vis the external, physical universe. I will argue that this is simply wrong, but the argument is sufficiently complex that I will not even present it here in outline. At this point let me just note that fact that I will be making this argument, and thus that I believe the following: in order for phenomenology's position with respect to subjective existence to be logically coherent, it *must* make certain assumptions about the metaphysical order governing the physical universe. Specifically, it must reject any attempt to explain the macroscopic order observed in the world as the result of teleological influences acting within physical space and time but not actually located in space and time, or governed by the laws of spatiotemporally located physical matter. In particular, it must reject any such teleological influence acting on qualia themselves—and, since all knowledge about external objects is given to consciousness through qualia, any teleological influence on the physical universe would by extension be a teleological influence on consciousness itself, or else knowledge would literally be impossible.

Phenomenology, then, or so I assert, is committed to a *nonteleological* metaphysical picture of the universe. Since phenomenology is equally committed to a refutation of idealism and nominalism—Husserl clearly believed that universals are *real*—phenomenology essentially has no choice but to accept the emergence theory as an explanation of the macroscopic structure

of the world.   There is certainly an order in the external world which consciousness is acquainted with and which forms the basis of judgment and perception.   This order is described by concepts which consciousness can thing about, name, and remember, which can be topics for consciousness in its own right: from the sugar cube, I can occupy myself by thinking about its whiteness, its sweetness, its tendency to dissolve in hot liquids, or the concept "sugar" or "cube". Since these concepts are themselves present to consciousness as topics or themes, a phenomenologist must certainly accept that they really exist.   Husserl is equally committed to the existence of external objects: they are not products of my mind, even if it is via subjective experience that I come to know them.   If external objects *were* in my mind, then it would seem as if I could choose which properties they have; the mere fact that as I engage with external objects I *discover* their properties suggests that they are subject to a lawfulness and regularity which is outside the influence of mind.   Moreover, to the degree that this object present to consciousness is a sugar cube, then phenomenology is committed to it *being* a sugar cube; its existence *qua* sugar cube is not just an illusion or approximation.   Phenomenology, in other words, is committed to high-level objects and concepts, that is, to metaphysical realism.   Taking these different commitments together, phenomenology is necessarily committed to realism without teleology, that is, to a balance between high-level realism and the conviction that high-level individuality and orderliness is an emergent property of lower-level structure. Phenomenology is therefore led necessarily to something like an emergence theory of external objects and phenomena; and a developed, technical emergence or complexity therefore is therefore a natural completion or corollary to the phenomenological project.

If we begin, then, from the perspective of emergence theory, we need to understand how emergent objects and phenomena function as singularities in language and judgment, which takes us into the realm of intentional consciousness.   To understand intentional consciousness, however, we have to understand how objects are present to consciousness, which means we need to understand presence to consciousness in general.   To understand presence to consciousness, we have to understand presence *within* consciousness, i.e., that which is in fact present to or within consciousness, those objects whose manner of existing is to *be* a presence within

consciousness.   We need to understand qualia.   To understand qualia under the stipulation that qualia *are* presences in consciousness, we need a "subjective ontology", an account of qualia's existence and individuation.   Finally, such an ontology, or so I claim, is only *logically coherent* to the degree that there are no teleological influences operating on qualia or in the physical universe as a whole.   And if *that* is true, then something like emergence theory *must* be true as an explanation for the macroscopic order of the world.   So I find a kind of logical circle from complexity theory to eidetic phenomenology and then to existential phenomenology, and back.

**"Analytic" and "Existential" Phenomenology.**

In bridging the techniques, language, and philosophical "style" of phenomenology with parts of analytic philosophy, I concur with David Woodruff Smith and Ronald MacIntyre, who argue that we have reason to turn to phenomenology even if we are not primarily concerned with phenomenology's central topic: consciousness and subjective experience.   There are outstanding problems in language and metaphysics, they maintain, for which phenomenology offers an elegant solution.   This is implicitly a return to the early, perhaps more technical phase of phenomenological research exemplified by the earlier work of Husserl, as opposed to the "existential" phenomenology that developed under the inspiration of Husserl's later work.   It is ironic that phenomenology is now firmly ensconced in the camp of Continental philosophy, given that Husserl's primary concerns were ones more familiar to the Anglo-American world: mathematics, science, metaphysics, and epistemology.   The analytic rigor of Husserl's best work has been replaced by a looser, more expansive philosophical style; phenomenological analysis has become based more on the connotations of words and ideas than on deductive reasoning—a style with its own rigor and effectiveness, perhaps, but one which makes intense demands on the reader.   And in a final ironic twist, phenomenology has become regarded by the philosophical community at large as a kind of subjective idealism—a philosophy which finds all

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meaning and perhaps even all existence in consciousness or the mind—when the very purpose of Husserl's system was originally to refute psychologism, to show that meaning is *not* in the mind.

Actually, I believe that there are reasons, some of which I will soon discuss, for this change in emphasis. There is more at work here than just historical irony. But I also believe that Husserl never intended phenomenology to become what it did become: first and foremost, a philosophy of human subjectivity and of the human condition. Existential phenomenology gives us a tool to study human experience outside the statistical abstractions of traditional sociology and economics, and so is a crucial element of modern intellectual life. At the same time, there is room to hope that the original vision which Husserl had for phenomenology—a rigorous, indeed, an analytic philosophy, addressing fairly traditional philosophical problems—will become relevant again. For a moment, however, I want to consider how phenomenology went from a technical theory to an existential doctrine; how it became a *subjective* philosophy.

The seeds of this transition lie in the rejection of psychologism itself; in the distinction between psychologism and subjectivism, if by "subjectivism" we mean a philosophy whose chief topic of concern is consciousness and human experience. Since the original inspiration behind Husserl's rejection of psychologism was mathematics, I will use this as an example. Husserl argues that mathematical entities, such as numbers, are not "in the head". If there are five books on the table, then *five* is not something mental; there is an objective entity called five. But Husserl goes a little further. Among those who agree that psychologism is wrong, there is a temptation to substitute some other "reductive" ontology of numbers (we can use this term because psychologism is in effect a reductive theory of mathematics, mathematical properties being reduced to psychological ones). We might, for example, reduce *five* to sets with five elements. We could then interpret "there are five books on the table" to mean something like: "the set of books on the table can be set in one-to-one correspondence with the finger of my hand", or with some other canonical five-element set. Husserl, in general, opposes reductive analyses like these. Or, to be more precise, Husserl does not appear to reject reductive science

in the broad sense, i.e., the idea that natural phenomena are governed by relatively simple laws which become complicated only in their superposition, and that physical bodies are reductively composed of smaller and simpler parts.   However, he tends to reject reductive translations of the *meanings* of linguistic expression or of propositions which are expressed by them.


Although Husserl rejects psychologism, he is still guided by conscious experience in assessing the meaning of propositions; propositions largely mean what we *experience* them to mean.   Propositions should not be parsed in counter-intuitive ways.   Here, Husserl can find common ground with "ordinary language" philosophers, except he is guided by introspective analysis rather than considerations of linguistic communities.   To parse the meaning of a proposition, in other words, we have to consider the conscious experience of one single individual who entertains that proposition: assesses whether it is true or false, or judges it to be true or false, either consciously or subconsciously, or even wishes it to be true or false.   In the example of five books on the table, it certainly seems as if consciousness in judging this to be the case is relating to an entity *five*.   Perhaps I count the number of books to see if they will fit in an open space on the bookshelf: when I have done so my mind lingers on the concept *five*, and my attention is focused on it; *five* has become a *noema*, an intentional content present to my mind. Any analysis of "there are five books on the table" which assumes that five does not really *exist*, and that the illusion of its existence is an effect of surface grammar—one which analysis should overcome—is to be rejected.   Considerations of ontological economy should not trump fidelity to experience.   We should not shirk ontological commitments when the entities in question seem to be ones which are intentionally engaged by consciousness.   If consciousness intends something, enters intentional relations with it, it must be incorporated into our ontology.   There are exceptions, to be sure: there are objects which consciousness posits, and then recants, such as the tree on the road which turns out to be a shadow.   But in such cases consciousness ordinarily corrects itself; the mental state of attending to that something *there* fades away.   Once I realize that the tree is a shadow, I cannot look it its direction and recreate the experience of thinking a tree is there; my attention invariably shifts elsewhere, such as to the object which causes the

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shadow I mistook for a tree.[105]   In a case such as the number five, there is no change in perspective, no experiential shift, which will change the patterns of intentional consciousness. *There is* a five which I intend and attend to.   The patterns of intentional consciousness, for Husserl, must be honored and be the foundation of ontological theory.


I have made this point with the example of numbers, but it could equally well be made with respect to sensory qualities, or with respect to cryptically physical entities such as the surfaces of physical bodies.   When I note that this book is red, I am attending to a redness which is not "in my head".   To be sure, there is a quale, a fragment of my total consciousness experience, which has the property of being red; this quale is a subjective entity present in my experience (and no-one else's).   However, I instinctively generalize and objectify this quality; I understand it as the property of a physical object.   From the redness of my experience I judge that the *book* is red, and thus invoke redness as an objective, publicly accessible quality of things.   I infer that others seeing this book see a red experientially equivalent to the red which I see.   Therefore I posit red as a feature of existence; redness itself exists.   Redness is not reducible to the set of red things, nor to mental states.   Husserl's temperament always leads him in the direction of metaphysical realism when confronted with ontologically difficult entities, ones which lead other philosophers in the direction of eliminative reductionism.   Husserl is a realist with respect to numbers and other abstract entities; with respect to sense-qualities and, needless to say, consciousness and conscious states themselves; with respect to "dependent moments" of physical things such as the two-dimensional surface of a three-dimensional object, or such as specific patterns evidenced by physical things—the grid pattern of a honeycomb, the outline of a skyscraper, etc.   His ontology is relatively "rich".   This does not mean that all of these kinds of entities are for him ontologically equivalent.   His "regional" ontology proposes a hierarchy among ontological regions which largely agrees with modern science, with "physical nature" as the base of the hierarchy.   But in the various reductive patterns or patterns of

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[105]   For a similar analysis by Huserl, *cf. Thing and Space*, p. 74.

influence he recognizes between these various regions, Husserl is careful never to let reduction become *elimination*; never to argue that the reduction of entities in one region implies that these entities cease to exist.   Their existence is secured by their presence to consciousness.


Husserl's realism, however, is tempered by a commitment to science and mathematics; he certainly does not seem to have any theological commitments, or at least any which show up in his technical work.   Indeed, this follows from the same commitment to intentional consciousness which guides his realism.   The theological or quasi-theological structures proposed by Hegel, or by modern "intelligent design" theory, are by necessity *not* present to consciousness.   Consider intelligent design, including those versions which try to be as far removed from doctrinaire theology as possible: the order evidenced in nature suggests *some* force or entity influencing, affecting, or "designing" natural history; this entity may be completely unrelated to anything described by any existing religion.   The evidence for this entity existing is inferential; the most a design theorist can hope for is that its existence is *plausible* given the evidence at hand.   It is not as if we ever "encounter" this entity in spacetime, or *intend* it the way that we intend physical objects, or even abstractions like the number five.   If we turn to design theory's competitor—Darwinian evolution—there we have an example of eliminative reduction which phenomenology can accept.   "Natural selection" is rather like a "natural designer" in that it occupies the *grammatical* place of a causal agent.   The language with which we discuss evolution appears to endow natural selection with agentive force: lungs *evolved to* breathe air; this is their *purpose*.   In reasoning about the "purpose" of anatomic features a biologist can reason *as if* there were an agency guiding evolution, and entertaining the "linguistic fiction" that such an entity exists is a way to simplify the language.   But everyone knows when using this language that this entity is not actually presented as existing; it is always possible to use language which does not invoke the linguistic fiction.   There is an important difference between reductive translation here and in the case of the number five.   We should not reductively translated "there are five books" to "the number of books is equal to the number of fingers on my hand" because what is translated away in this case is something present to consciousness; but we may translate "the lungs are designed to breathe air" with "via natural

selection the lungs evolved from gills, so that animals could get oxygen from air rather than water" because what is translated away in this case (a "natural designer") was never present to consciousness in the first place.

Just as Husserl is committed to an ontology rich enough to accommodate all *noemata* (intended objects present to consciousness), he is also committed to an ontology parsimonious enough to abstain from metaphysical entities which by their nature *cannot be* present to consciousness.   It is this balance between ontological richness and economy which I have tried to express here: Husserl rejects teleological explanation because teleological influences are by their nature not things with which consciousness can become acquainted.   Husserl can therefore be called an ontological moderate, and this middle-of-the-road position is not without its nuances and difficulties.   For example, Husserl's realism commits him to the view that the concept or essence "living thing" exists in a strong sense: *there is* life; it is not as if life is reducible to the set of living things.   On the other hand, there is no teleological architecture hovering over existence which would fix the meaning of a concept like "life"; it is not as if "life" refers to an idea in the mind of God.   So concepts or essences have an inherently complex place in Husserl's philosophy: they are real, but they have no spacetime existence outside of the set of objects which form their extension; they do not have any location in an idealized "space" like the set of ideas in the mind or plans of a God, or the realm of Platonic forms.   This applies to natural kinds like living things; it applies to abstract entities like numbers; it also applies to consciousness itself.   Ironically, Husserl is committed, I will argue, to some version of a physicalist theory of mind, precisely because Husserl cannot allow into his ontology anything which cannot be rendered present or explicit to the mind.   Phenomenologists should reject arguments to the effect that mental states could be caused, for example, by a genie who implants sensations in my consciousness, as opposed to emerging our of physical matter, because nothing in the experience of mental states tells us whether or not they are physical.   The fact of being, or not being, caused by physical processes is not an essential property of a conscious experience; therefore, it is plausible that there are possible worlds where conscious experiences are *not* caused by physical

processes.[106]   Phenomenology, however, rejects *a priori* possible worlds where consciousness is caused, or filled with content, by entities that cannot themselves be present to consciousness—such as evil or benevolent genies outside spacetime.   This is not a disproof of such worlds, merely an acknowledgement that phenomenology has nothing to say about them. But it does imply that phenomenology is committed to a physicalist account of mind by default; or, at the minimum, to an account of mind for which the entities that cause or form consciousness are themselves of a kind that can be *present* to consciousness.[107]

In this subtle and sometimes difficult "moderateness" in Husserl's metaphysics lies, I believe, the germinal essence of the existential phenomenology which emerged in subsequent generations, even in Husserl's earliest work.   Because the final arbiter of existence for Husserl is presence-to-consciousness, the philosopher must take as his or her central philosophical tool, as the foundation on which a philosophy under development rests, his or her consciousness itself. Consciousness has central stage.   But phenomenology also undermines many of the traditional narratives with which consciousness (or "Spirit", in more Hegelian language) has assessed its own place in the world.   I as a consciousness can connect myself to the world only indirectly, if

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[106]   For an extended treatment of this point *cf.* below, p. 126.

[107]   In *Ideas I*, for example, Husserl claims that "*An object that has being in itself is never said to be out of relation to consciousness and its Ego.*   The thing is thing of *the world about me*, even the thing that is not seen and the really possible thing, not experienced, but experienceable or perhaps-experienceable" (p. 148; Husserl's emphasis).   This seems consistent with my claim that phenomenology cannot accept explanations for things like the determinate source of mental content in terms of entities like genies which by their nature cannot be present to consciousness.   If the genie's powers to create qualia was itself explained by physical *laws*, then the genie *could* be present to consciousness the way that other physical things are.   But then an explanation of the genie would amount to a physical explanation of consciousness.   Genies only work as arguments against physicalism to the degree that their nature is assumed to be *beyond* physical law, but necessarily then they are also beyond conscious comprehension.

I consider my body or my mind as if in the third person, subject it to anatomical or neurological scrutiny. Not that anatomy or neurology are false: I certainly believe that "I" am a bundle of neurons and molecules. But this scientific belief is not an existential "finding" of myself in the world; it does not make me "at home" in the world in the way that Descartes may have felt at home in existence after he had been pulled back from the edge of absolute skepticism by a nondeceiving deity. To the degree that consciousness is *subject*, there is no narrative or account of existence in which consciousness can recognize itself in the scheme or plan of existence. Consciousness's only hope of recognition is recognition by other consciousnesses, who are also strangers in the universe—in other words, recognition by other citizens in a secular community. The ethical and existential doctrines which occupied the great French phenomenologists, whose details occasioned quiet but intense arguments amongst themselves, follow rather quickly from Husserl's central metaphysical position, one which takes consciousness as the starting-point of philosophy but also is committed to the modern scientific world-view.

The idea that the order and systems which clearly are features of the natural world could result from evolution, without any teleology for its guide, is precisely the research agenda of complexity theory in particular, and of modern science in general. Although this has implications for various technical areas of philosophy, it also has implications for the more "philosophical" areas of philosophy, for ethics and for humanism: how do we develop a moral code, how do we discover meaning, in a universe stripped of teleological purpose? Here existential phenomenology has something to offer; it can be marshaled into a theory technical and systematic enough to construct a new ethics, and new humanism. If *world* is defined as presence-to-consciousness, let us further assume (as seems appropriate) that presence-to-consciousness has an implicit ethical dimension. *Pain* can be present-to-consciousness; consciousness does not dispassionately observe what is present-to-it; it *feels* what is thus present. But once we have brought such characterization into the picture; once we have shown that presence-to-consciousness can sometimes involve axiological notions such as *pain*; then we have shown that the realm of presence-to-consciousness has an implicit moral dimension. But, since presence-to-consciousness has been defined as ontologically foundational

for the world, we now have a moral dimension to being itself: an *a priori* ethics, a kind of modernized and phenomenologized Kantianism, but one which makes no appeal to some agency dictating right and wrong. This *construction*, however, collapses without the assumption of non-teleology.

To balance, then, what I believe are the technical veins of dialogue between phenomenology and science, or between phenomenology and theories related to complexity and emergence, we also need to keep in mind phenomenology's contributions to ethics and humanism in our times. Furthermore, the ethical system proposed by thinkers like Sartre, Merleau-Ponty, or Jean-Luc Nancy derive from an ontological theory of consciousness which is subtle and complex in its own right, even if it is not always presented as rigorously as we would like. In effect, the technical core of phenomenological analysis continues to be relevant once we migrate to existential phenomenology and phenomenological ontology, and to that ultimate phenomenological project, that of offering a rigorous and coherent ontology of consciousness, one which demands technical rigor as well as humanistic intuition. This ontology, I believe, itself rests on the foundation of a nonteleological metaphysics like that which modern science has not only presupposed, but also, vie emergence/complexity theory, has shown to be a reasonable doctrine even given the macroscopic order evident in the world. I believe—and perhaps here I disagree with philosophical "common sense"—that the modern scientific, indeed, physicalist picture of the world is a *precondition* for phenomenology's *ontological* approach to consciousness. In the next chapter, I will state and defend this particular thesis.

# Chapter 5: Consciousness and Ontology

The fact that Husserl emphasizes the global, empirical structure of the life-world, the fact that he refuses to endorse a science which is "reductive" to such a degree that it feels the need only to study certain specialized "reductive" parts of empirical reality, suggests that Husserl shares a fundamental philosophical vision or project with empiricism, broadly conceived. Husserl cannot, however, regard the empirical order of the world as simply *there*, as a kind of transcendental criterion for there being a world in the first place, because that would render consciousness a mere witness to the empirical order. Husserl cannot, in other words, endorse the kind of ontological philosophy one would develop if one read Wittgenstein's "The world is all that is the case", and indeed if one read the *Tractatus* as a whole, as an *ontological* theory. Husserl would not endorse an ontology in which the fundamental stratum of being is the *facticity* of the empirical world. Husserl cannot endorse such a picture of the world, because it would render consciousness as nothing but a "source" for empirical content, a mind which forms a picture of the world that mirrors or reflects, to varying degrees of correctness, the world's empirical formulation. Indeed, I would submit that a systematic flaw in that portion of the philosophy of mind developed under the influence of empiricism—which would seem to include a good part of the analytic philosophy of mind—is a tendency to present the mind as if an empirical content were somehow "lifted" from the structure of the world and transferred with varying degrees of accuracy onto the mind. The problem with this picture is not so much that it leaves unexplained how this "transfer" can occur—unless we are dualists, I think there is no mystery in how information from the world can be imparted to the mind—but rather with the implication that the empirical order of the world can be somehow abstracted from physical spacetime and encapsulated into a "picture" that reappears as a schematic image in my mind. Empiricism seems to verge on treating the empirical order of the world as *the* world, and treating

the actual existence of the world—the *stuff* which makes this, rather than any other possible one, *the* actual world—as a mere corollary, as if "matter" were just one fact among others. Whatever merits or flaws befit this attitude from the point of view of metaphysics, I think it is deeply flawed from the point of view of mind, because it offers no means to conceive of mind except as a repository of empirical pictures agreeing to some degree or another with empirical reality.

I have emphasized my dispute with this approach to mind in part because my intention here is to downplay, rather than advertise, potential incompatibilities between Husserl's phenomenology and the analytic philosophy of mind. I want to note, however, those areas where these incompatibles are significant and need to be accommodated, even if just as a backdrop for pointing out that such incompatibilities can be overcome. The dispute at issue here is not between Husserl and any particular theory of mind, but rather it concerns a tendency that seems to reappear in several different theories of mind. Let us call this tendency the "degenerate" picture-theory of mind: a theory according to which the mind simply by definition consists of empirically ordered pictures of reality—pictures, in other words, formed via generic rules of empiricity as such—which simply inherits a certain empirical structuration from the empirical order of the world, without discussion of how this empirical structure emerges within reality itself, of the ontological status of the mind, or with how the "transfer" of empirical ordering from world to mind occurs. The temptation to this "degenerate picture theory" is perhaps found in theories that account for our knowledge of the external world by appeal to the biologically necessary accuracy of perception. It is also perhaps evidenced by functionalist accounts of sensations in terms of their role in initiating a chain of reasoning. Such approaches tend to undermine the possibility for an *ontological* description of the mind, entailing instead a mind which exists only in relational structure with the empirical world-order. Aside from undermining the possibility of introspection, this also tends to foreclose any hope of the philosophy of mind providing a foundation for ethical and political philosophy, for which the human subject, via self-consciousness, is an entity *sui-generis*, a *given* from which foundation ethics and laws are to be developed, not an illusory effect of a relational system.

Having argued that Husserl's phenomenology cannot be reconciled with certain approaches within the analytic philosophy of mind, I now want to maintain, conversely, that there are other approaches within this disciple that are in fact consistent with Husserl. Although different Husserl scholars come to different conclusions with respect to Husserl's actual theory of mind (if one can read a "theory of mind" in the analytic sense into his works in the first place), I personally believe that Husserl's work entails a kind of cross between phenomenological realism and scientifically grounded physicalism, such as one finds in John Searle. Searle asserts, in effect, that the mental is the physical; that conscious states, to put it bluntly, are types of physical objects. He further asserts that there is no reason to regard the mental and physical as incompatible unless we had reason to believe that something physical simply cannot also be mental: that properties predicated of mental objects cannot coherently be predicated of physical ones. For Searle, there is no reason to make this assumption. Minimal physical particles, to be sure, are not conscious; but nor are they red, solid, or transparent. Consciousness, for Searle, is an emergent property akin to liquidity or transparency. This might be characterized as "get over it" physicalism: some physical things are also mental; get over it![108] Although it is one I share, I am dissatisfied with Searle's formulations of this position, though he has presented it several times. Each time he seems only to assert what needs to be proven, namely, that it is useful for us to see mental entities, particularly conscious states, as physical things which also happen to instantiate mental properties. In any case, I believe that there are parts of Husserl's work which reveal positions toward mind closer to this one than to any other; and that we can find in Husserl, and phenomenology in general, the extended treatment that one might find lacking in Searle.

The notion that Husserl's philosophy of mind is implicitly physicalistic may seem counterintuitive, especially if we consider only eidetic phenomenology, which pretty clearly does

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[108]    Owen Flanagan perhaps has something similar in mind when he less charitably charactizes similar views as "don't have a clue" physicalism: we have no idea what mind *is,* but it must be material since everything else is.

*not* propose a physicalist account of mind.   Eidetic phenomenology, however, does not propose any account of mind at all; the attempt to actually *explain* mind, i.e., to contextualize it within some ontological theory, would contradict the ontological abstention prerequisite for phenomenological reduction.   Once one turns from eidetic analyses to other work, however, we can find several points which might support a physicalist reading of Husserl's account of mind. First, Husserl rejects a "picture theory" of mind where the mind consists of pictures that simply mirror (to varying degrees) external reality: for Husserl the mind is intentionally related to the things themselves, not to internal representations of those things.   It seems impossible for the mind to come in contact with physical things unless it were itself physical.   Second, Husserl's doctrine of "ontological regions"—where the space of existence is divided up into distinct realms of reality, among them material, socio-cultural, and psychological or phenomenological—includes the possibility that one object can exist in multiple regions at once. For example, a work of art is both a physical thing (in the region of material nature) and a cultural object.   It is consistent with this doctrine, then, that the mind could be both physical and mental; one object in two distinct regions.   This, indeed, is the approach David Woodruff Smith uses to ground his "double-aspect" theory of mind in Husserl, which I will discuss further in Chapter VIII[109].   Third, Husserl's theory of "moments" or "dependent parts", which is prominent in the *Investigations*,[110] can be used to describe consciousness as a *moment* of the brain in the sense that the two-dimensional surface of a sphere is a moment of the three-dimensional sphere: something logically but not physically independent.   This, indeed, is where Woodruff Smith

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[109]   *Cf*. D. W. Smith (1995), pp. 324-326, and (2007), pp. 164-166.

[110]   Husserl defines a "moment", which I will suggest is akin to a "property" (*cf*. note 33), as a "dependent part" of a whole and as "founded" within something else, which, for me, anyhow, has a slightly reductive overtone.   The moment requires the substrate to give it existence and foundation.   *Cf. e.g.Logical Investigations* §III.13 and §III.14.

finds a Husserlian source for his "multiple-aspect" theory.[111]   Fourth, the final chapter of *Ideas II* "synthesizes" the regional analyses of material nature and of consciousness which had "to this point been kept separate"—and this synthesis can be read, I believe, as a physical account of mind, so long as we do not assume that mind as *physical* commits us to regarding mental properties as illusory or eliminable.   Finally, Husserl insists that while the "natural stance" of the scientists must be "bracketed" during the phenomenological reduction, it is not precisely *wrong*, and I doubt that Husserl would endorse a position which was deeply and systematically opposed to the scientists' overall picture of the world.

The regional ontological theory Husserl develops in *Ideas I* and, more fully, *Ideas II* bears an interesting relationship to his earlier eidetic analyses.   On the one hand, this theory is introduced in eidetic terms: the ontology of a region involves the "essence" of that region, so that, for example, the ontology of the region of material nature is explored by considering the essence of the concept "material thing".   The strategy of extracting the *essence of a concept* reappears throughout Husserl's work: it is applied to mathematical entities, for example, in the *Formal and Transcendental Logic*.   In these terms it remains within the overall framework of eidetic analysis.   To some degree the analysis of any given ontological region can be carried out within this framework.   Once we explore the presence of one single entity in multiple regions, however, I contend that we end up stepping outside this framework.   If we apply Robert Sokolowski's prescient image of Husserl's work as balancing sameness across differences with a meticulous attention to differences themselves, then the kind of continuity involved in one object which is logically identical across different ontological regions is structurally different from other phenomenological analyses of continuity[112].   For example, as Sokolowski points out, Husserl's temporal analysis of intentionality is implicitly a theory of continuity across

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111    (1995), p. 326.

112    *Cf*. Sokolowski (2000), p. 27.

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differences.   Once something is an intentional object for me, a *noema*, I am exposed to different perceptions of it through time: each passing moment disclosed slightly different properties to me. I recognize the object as perceived in one moment, however, as identical to that perceived a moment before, as numerically *the same* object[113].   Conversely, I perceive an *eidos*, such as red, as the same essence when it reappears at different times.   There is then a continuity of the particular across different properties predicated of it, and a continuity of a property across its distinct instances.   For Sokolowski, eidetic analysis is precisely analysis of these continuities. However, when I say that one object is "continuous"—i.e., numerically identical—across different ontological regions, I am proposing a continuity which is not experientially given to me in the manner of these other continuities.   This is a different kind of continuity.   The identity of an object across different ontological descriptions is not the same as the identity an object in protention and retention.   The analysis of this *ontological* continuity lies outside eidetic theory.

For example, when I note of a certain table that it is oak, and then further that it is varnished, there is a temporal continuity between these two impressions, and a certain perceptual overlap between then.   Some of the same data—e.g., the table's color—affects both of these judgments.   Suppose I first note that the wood is oak, and then, coming closer, perceive a shininess on the surface, then touch the surface and feel a smoothness.   As I begin to approach the table I anticipate getting more information about its visual and tactile appearance; my initial impression of the table as oak gradually transitions into other thoughts as I direct my attention to its shininess and then its smoothness.   There is no temporal rupture between the formation of one judgment—it is oak—and a second—it is varnished.   Contrast this, however, to the case where I judge (or am aware of believing) that heat is kinetic energy.   Here I have two different conceptual nexuses, two different sets of images or of cognitive operations: thinking about heat, and thinking about kinetic energy.   My mind connects the two, but this connecting works differently than the one where I connect the table posited as oak with the same table posited as

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[113]   *Cf*. McKenna, p. 161; *Lectures on Internal Time Consciousness*, p. 57.

varnished.   In the case of the table, the connection is implicit in my perceptual experience; there is a temporal continuity between the two impressions unified by a perceptual focus on a perceived object, the table.   In the case of heat, there is no comparable perceived object, even if I felt a sudden unexpected heat from somewhere and this caused me to think about the equation of heat and kinetic energy.   The second pole of this equation—kinetic energy—is not perceived, at least not in such a way that what is present to my mind is the *thought* of kinetic energy (even if what is present in my experience *is* kinetic energy).   There is no *perceptual* link between a heat-sensation and a cognitive operation of visualizing, say, little jostling balls as a metaphor for visualizing heat as kinetic energy.   The connection, then, exists in my mind, but only insofar as I am concerned with the scientific *explanation* of heat, with ontological determinations transcending actual experience.   The continuity between this one phenomenon, heat/kinetic energy, in two different regions—in the region of material nature as kinetic energy, and in the region of conscious experience as heat—is a continuity only present in my mind as I think about heat from the point of view of the "natural attitude".   Consequently, this continuity is one which would be "bracketed" by phenomenological reduction.   The phenomenological reduction might permit us an eidetic analysis of kinetic energy, and a different eidetic analysis of heat, but the notion that these two analyses are investigating *the same thing* cannot be established within the eidetic framework.   Since Husserl's theory of ontological regions *does* permit us to make such equations across regions, we must conclude that there are analyses possible in this theory which are not possible within eidetic theory.   The moral of the story is that even if eidetic analysis seems inconsistent with some other philosophical doctrine—such as physicalism—we should not conclude that this conflict extends to phenomenology itself, because eidetic analysis is only one part of phenomenology, with a delimited role.

Another perspective on phenomenology in relation to physicalism is offered if we consider that the human self essentially *is* its consciousness, or its history of conscious states. This means that any particular conscious state, or any content present in a conscious state, is a *part* of the subject as well as being a disclosure of extra-subjective reality.   Conscious states, in effect, are simultaneously objective and subjective.   Sokolowski notes: "If we examine our

experience more carefully, we shall see that sensations are really not radically distinct from our states of consciousness"[114], and elaborates later:

> Both sensations and intentions are now said to arise from the same source; they are both constituted by primal consciousness, both formed out of the same "raw material". Now what basis do we have for making any distinction at all between intentions and sensations, between noeses and hyletic data? What we look at them from the point of view of temporality, which is the ultimate and decisive point of view for phenomenology, sensations and intentions fall together; there are no longer two immanent objects, but only one. The distinction which Husserl makes in the *Logical Investigations*, the distinction which served there as the base of his concept of constitution, collapses when we study inner temporality, and in all logical rigor Husserl should conclude that no constitution at all has the schema "intentions-sensations". He does draw this conclusion, but only after he gad found a new way of explaining objective constitution through genetic analysis.[115]

He elaborates further by quoting *Ideas II*:

> By analysis we are led farther and farther back, and come finally to sensory objects in another sense. These objects are the basis (*sc.* constitutively understood) of all spatial objects and likewise of all thing-objects in material reality. In turn, they lead us back to certain ultimate syntheses, *but to syntheses, that come before any thesis*.[116]

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[114]    Sokolowski (1964), p. 96.

[115]    *ibid.*, p. 98

[116]    *ibid.*, p. 112.

So the very notion of a sensation that *represents* or *stands for* a percept needs to be reconsidered.

There are occasions where Husserl seems to write as if the distinction between sensation and perception is a product of experience, and not of an intrinsic difference. In other words, we should not model mental activity as if a sensation *becomes* a percept when it goes from being predicated of experience to being predicated of an object. If I see something as red, it is convenient to say that I have a red *sensation*, and at some point this leads me to believe that such sensation discloses the fact of something being red, which makes the red sensation become a red *percept*. Indeed, I will use this kind of language elsewhere here, but note that it is potentially misleading. We need to bear in mind that there is only *one* mental entity here, which is both sensation and perception. As illustration, consider the fact that sensations can be treated not only as disclosing properties of objects being cognitively studied, but as objects to be so studied in their own right. Consider a humming noise I hear coming from another room. As I begin to pay attention to this sound I may try to walk toward the source of the sound, try to ignore other sounds I hear, etc., trying to orient myself toward the sound as such. This is like the action I take if I want to orient myself toward an object to discover more of its properties, but here my orienting occurs not relative to an object whose properties are disclosed through sensations, but toward a sensation itself. In such a situation I am taking a stance toward a sensation comparable to that I take toward objects; I am regarding the sensation not just as a presence in my experiential field, but something to be investigated by altering my perceptual orientation toward it. This example helps to show that the difference between a sensation as a *presence* in experience, and the existence of something *presented* in experience as being a particular way, is a difference in *attitude*. Experience is not a *structure*, giving information about the world insofar as the world is structured roughly isomorphic to it. Experiences are first and foremost *things*, because in their summation they constitute my own subjective existence, my selfhood, which is an *entity*, not a *structure*. But this makes sense only if sensations are intentionally related to physical objects, disclosers of their properties, aside from being constitutive atoms of subjective being. And this only seems possible if sensations are somehow physical.

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The final chapter of *Ideas II*, which I have mentioned, is one of the most remarkable sections of Husserl's *oeuvre*, and has been unfortunately neglected. Here Husserl offers his thoughts on the "mind/body" problem in a manner which reads much closer to analytic philosophy of mind than to conventional phenomenology, complete with symbolic formalizations of concepts like the relation of conscious states to brain states[117]. If we are looking here for a definitive Husserlian statement about whether or not consciousness is physical, however, the text is inconclusive. This chapter is worth highlighting, though, even if only because it demonstrates how for Husserl eidetic analysis or phenomenological reduction was not everything: the kind of questions and speculations Husserl engages here would not even make sense in their terms. Aside from that, Husserl declares that "spirit can be grasped as dependent on nature and can itself be naturalized, but only to a certain degree" (p. 311), which is not especially helpful. Nonetheless, it is clear from the discussion anterior to this statement that Husserl understands the mind/problem in a contemporary way, or through the lens of dilemmas which more recent work have also focused on: how the mental can cause effects in the physical (p. 296); how sensation seems to mediate between the physical body and mental life (p. 299); etc. An enigmatic discussion about my inability to predict the future (p. 310) leads to a discussion about personal identity as opposed to natural identity, and the point seems to be that through my memories and anticipations I posit for myself an identity which cannot be fully explicated in physical terms. Subjectivity, not only in the sense of subjective states of consciousness such as qualia (which Husserl here seems to call "soul"), but in the sense of an enduring personal being (which he here calls "spirit"), cannot be explained by reductive science. It is not clear to me, however, whether Husserl wishes to suggest the *ontic* differentiation between "spirit", "soul", and "body", as if the spirit is *not* the body, that is, something *other than* or in some other *place* than the body. He discusses various types of "founding" of spirit on soul, and on soul on body. He also explicitly rejects "parallelism" (p. 308), on grounds which

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[117] *Cf. Ideas II*, pp. 304-7. Subsequent references to this chapter in the following sentences will be in-line.

seem to reject dualism in general.   It may be acceptable to read his theory as asserting that subjective *properties* cannot be expressed in terms of physical *properties*, if by "physical properties" we mean the properties which physicists would use to explain physical nature; but this does not rule our physicalism property understood.   Love is not a physical property like mass or charge, but this does not mean that physical things cannot instantiate the property *being in love*, or that such instantiating cannot be explained in terms of their instantiating more "physical" properties.   We need to distinguish the expression of a *property* in physical or non-physical terms, and the explanation or explainability of a property's *instantiation* in physical terms.   In Husserl's terms, if *X* is a *moment* of *Y* then *X* is not identical to *Y*, but *Y* can still "found" or "determine" *X*.[118]

This brief discussion is probably not a convincing case for reading Husserl through the lens of physicalism, but I will try to expand this case in subsequent chapters.   What I will note here is that I dispute the implicit assumption which seems to inform the judgment that such a reading is somehow counterintuitive; namely the assumption that the mental and the physical are structurally incompatible, and that any attempt to identify the two must push against this incompatibility.   I also dispute what I see as a related assumption, that idealism, such as Husserl's phenomenological idealism, is temperamentally opposed to physicalism, or to the belief in physical science's ability to accurately characterize a real, mind-independent external reality.   The latter belief may contradict idealism to the degree that idealism claims that the mind *constitutes* the objects of its experience, i.e., causes them to come into being.   It is not clear to me, however, that the canonical idealists actually believed this; or even if they did, that there is no way of reading their work without endorsing this belief.   If I could distill the moral of

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[118]   The analogy between Husserl's "moment" and what we would call "properties" is revealed in Woodruff Smith's discussion of the former in (2007) p. 278; *Cf.* also Moreland in *Universals* (2001), p. 103: "the most important issue in the debate about Husserl's view of universals is his doctrine of property-instances; that is, moments".

idealism in the broad tradition from Kant to Husserl into a single claim, it would not be the metaphysical claim that the mind creates reality, but the essentially moral and political claim that the starting point for philosophy should be the self-positing human subject. It is not that the mind creates the world, and that therefore any discussion of the world should begin with the mind; it is rather that the foundation of philosophical thought is not the world itself as empirically given, but the subject in its self-relating. From this subjective self-relation we can extract the following: first, the subject posits itself because of the "thereness" of subjective (viz., conscious) states; that these states are simultaneously presentations of subjective existence and also of empirical reality, because they represent something as being the case; and that because my self-positing through conscious experience is also an instance of my becoming aware of myself as having *beliefs*, in this self-positing I also represent myself as an "epistemic agent" in the world, one who conducts activity aimed at forming an empirical picture of the world. So, for example, if I see something as red, I have the red sensation through which I posit myself as existing *sui-generis*, posit my consciousness as *there* in the world; I also have that same sensation which represents something as being red, and therefore compels a belief in me; and finally then the realization that I am not only a *consciousness-there* but thinking being attuned to empirical possibilities in the world (even if these possibilities turn out to be wrong; i.e., my beliefs incorrect). Therefore, starting from self-relating through consciousness I can still arrive at a picture of an empirical world, indeed, one which is external to me and mind-independent[119].

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[119]    If this account is consistent with Husserl, it might be true that of all the German Idealists Husserl was closest to Fichte.    Consider the following, taken from the *Encyclopedia of Philosophy* article on Fichte:The ethical tone of Fichte's idealism found expression in his fundamental view that reality is ideal activity, underived, and prior to any specific or definable thing, substance, or process.    The primary reality of self-existence is in its ideal self-affirmation.    As Fichte formulated it, "The Ego posits itself."…The absolute and infinite [self-affirming] activity evokes and sets for itself a field in which it is to act.    In Fichte's terms, "The Ego poists a non-ego".    This second positing in no way nullifies the basic and absolute self-affirmation of the Ego, but it involves further differentiation within both the Ego and the non-ego, in the absolute ideal activity, and in its field of operation.    In thus setting or positing a range for its activitry, the Ego has in fact limited itself.    We now have the conditions for definite knowledge, but already we have an

Physicalism, therefore, is not incompatible with a "thematic" idealism which starts with the mind not because the mind creates the world, but because the theme of subjective self-relating is the theme which grounds all other philosophical themes.


     I believe that it is possible, then, to reconcile idealism and physicalism, two philosophical doctrines which are conventionally held to be radically opposed. The strategy behind this reconciliation would be to argue that philosophical analysis must begin with subjective self-positing not because the subject, or consciousness, is somehow "non-physical" but because philosophy cannot assume that the whole set of truths about the world can ever be somehow presented before us at one time. Knowledge is a *process*, a process which must have a starting point. The staring point for the process of *acquiring* knowledge need not be the same as the starting point for the process of presenting knowledge which has been acquired. The first page of a work of philosophy need not resemble the first page of a textbook on quantum physics. Taking a page from Habermas, we could say that empirical knowledge presupposes as its very condition the free, rational activity of a subject who can adjudicate competing claims of evidence. The world may only be one way, but there will almost never be one single theory which indisputably and completely explains its object. The only way that we can conceive of ourselves as beings possessing empirical knowledge is because we are able to participate in a

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opposition-in-relation of the knower and the known, a subject-object dualism. Out of the fundamental metaphysical "opoositing" expressed by the second principle, the specific limitations and distinctions of our world, the world that we know, have made their appearance. The conditions of finitude and definition have emerged out of the undefinable ultimate self-activity of the infinite Ego. Therefore Fichte formulated his third principle: "The Ego positsa limited ego in opposition to limited non-ego". [This] "limited ego" is the subject of empirical knowledge. (Tsanoff 1967, pp. 194-195.)We can consider in the context of phenomenology, not only this way of progressing from self-positing to empirical knowledge, but also the fact that Fichte's motivation for resting philosophy on subjectivity was first and foremost *ethical*. Whether or such primary ethical concerns motivate Husserl, perhaps a similar stance motivated many of his followers, even if later phenomenological ethics stressed intersubjectivity, more than the self-positing of *one* subject.

space of public reason where explanations are subject to scrutiny and revision.   This "public sphere" itself, however, seems to have no existence without the assumption that there are free, rational subjects who form its atomic units.   The "exercise of public reason" cannot be theorized as an organic extension of our biological process of seeking information, as if the "subjects" in the realm of public reason are to be conceived biologically.   Empirically, of course, this may be what the public sphere is; but when we conceive of the public sphere as the collective and noncoercive exercise of reason, we are not simply observing human behavior, but theorizing human behavior through the medium of a rational ideal which is not biological.   By analogy, democracy may be one form of social organization, and biology may dictate that societies must organize somehow or other—democracy having perhaps evolved by historical process from other systems of organization which were more direct translations of our biological nature; and yet, democracy, when defined as a *theory* or a normative ideal, is presented as a structure among whose posited entities are human subjects defined by the phenomenon of their self-positing. One of the important and, I feel, overlooked benefits of Kant's transcendental idealism as compared to Hume's empiricism, and perhaps Locke's as well, is that by refusing to theorize the subject in empirical terms Kant can develop a normative political theory such as that sketched in *Perpetual Peace*, whereas Hume seems relegated to noting which social forms humans have chosen in fact.

What unites physics and idealism, to put it differently, is a deep commitment to ontology: to a strategy of investigation whose first step is one of excavating the primordial distinction of being and non-being in which the objects of concern come into existence: matter, in the one case, consciousness or subjectivity, in the other.   Of course, noting this parallel between idealism and *physics* does not prove a similar parallel between idealism and *physicalism*.   Contemporary physics perhaps endorses a kind of reductionism, but we must be careful to characterize this reductionism carefully.   For example, we cannot regard contemporary physics as proposing a reduction from one empirical theory (e.g., biology) to another (e.g., quantum mechanics), because the primordial theory of physical theory is no longer held to be an *empirical* theory (even if it should not contradict empirical observation).   String

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theory is not an *empirical* advantage over competing theories, because no observation will probably be able to tell us whether "strings" as posited by the theory actually exist. String theory is favored for metaphysical, not empirical, reasons. Contemporary physics should perhaps be seen as a dialectical unfolding of a complete picture of the universe from a primordial, metaphysical starting-point, not as a reductive account of the universe *to* the theory pertaining to that starting-point. Reduction may play a part in this unfolding, but reduction should not be theorized without appeal to this dialectical context. Biological properties may reduce to chemical ones, for example, but this is because the biological sublates the chemical and is its dialectical unfolding, not because within the chemical the biological disintegrates and is revealed as a mere illusion. The challenge is, perhaps, to create a new physicalism, or to present the core doctrines of physicalism—reductionism, say, or the ontological elimination of immaterial things—with sufficient nuance that the metaphysical priorities of contemporary physics are not erased. Physicalism in this sense would be compatible with idealism, at least with Husserl's idealism.

I have argued that the human subject posits itself through conscious experience and that this self-positing has two components: a self-positing proper, where consciousness encounters itself as *Dasein*, as *being-there*; and an acknowledgement of itself as "rational agency" operating—i.e., forming beliefs, seeking information—in an empirically ordered world. The world thus presented to consciousness, then, has two or two aspects. Insofar as it is *there*, insofar as it sets the stage for the subject positing itself as *Dasein*, the "world" should be characterized in ontologically minimal terms; as the regime of being itself, or perhaps as simply the theater of raw matter, matter as the "icon" of minimal physical existence. Insofar, however, as the subject is aware of itself as an epistemological agency, the world is not just "raw" matter but the instantiating of an empirical order. Thus we have a bifurcation in existence between "raw" matter and determinate being, a bifurcation itself founded—or at least disclosed—within consciousness itself. I have found it useful to capture this bifurcation through the metaphysical distinction between properties and substrata, between a property and that which instantiates it. The empirical world, in my treatment, then, is the world of properties, and the order of the

empirical world is due to the way properties in being instantiated relate to one another.   I therefore propose a property-theoretic approach to empiricity in general, which will be matched with a property-theoretic approach to eidetic phenomenology (the phenomenology of those concepts which are constitutive of the empirical order as a structure) and to the phenomenology of the life-world.   Given the distinction between property and substrate, there are therefore two analyses relevant to consciousness: consciousness relating to the *property*, as a concept or essence, and consciousness relating to the *substrate*.   The former considers consciousness as empirical being, the latter as *Dasein* or as primordial thereness.   The property-substrate distinction is therefore keyed to two different modalities of subjective existence.

Because the subject is, in one of these modalities, presented with an empirical world—both receptive to empirical order and operating within it—phenomenology, to the degree that it is concerned with the subject through this mode of its existence, overlaps with empiricist or functionalist theories of the life-world.   I will explore some of these concepts through the restricted medium of property theory, i.e., through the image of the environment as a theatre of interconnected property instantiations.   But because Husserl is also committed to introspective analysis, and because phenomenology needs subjective self-relation as an analytic starting-point, Husserl is also committed to a different, to a more primordially *ontological* view of the world, one which seeks to found the regions of material nature and of consciousness in primordial, exemplary entities—for example, in conscious states.   This alternative perspective balances the holism and relationism of Husserl's theory of the life-world with a vision of intentionality which is founded upon one single object and/or property, isolated from within the network of the environing world, present to individual consciousness.   Husserl's philosophy therefore alternates between a holistic and intersubjective theory of the lifeworld and an individualistic theory of primordial presence-to-consciousness.   To the degree that phenomenology concerns the lifeworld, it can be reconciled with more recent emergentism; in its more individualistic guise, however, phenomenology, as I suggested in the introduction, leans toward reductionism.

I therefore question the assumption that the modern, physics-oriented world-view is one

which undermines consciousness, and that the two can be philosophically reconciled only with difficulty.  In stating this I would like to observe that both the modern notion of consciousness and the modern notion of the physical world (and, if you will, the closure of the physical world) are relatively recent arrivals.  Descartes, for example, understood both physics and consciousness in terms of God (as in, I can do science, after all, because a perfect being would not systematically deceive me).  If Descartes believes that whenever he has a sensation or impression then God is feeding him information, or ensuring that his impressions are largely accurate, or that God has designed his sensory apparatus to ensure his senses being largely accurate, then I am not sure Descartes understands by "consciousness" what we understand by consciousness.  I, at least, do not think of a conscious being as one somehow in communication with God; I think of a conscious being as one of whom one can ask: what is it like to be *that*?  To define consciousness in terms of "what it is like to be *x*" is perhaps a prerogative of the modern world; an eighteenth-century philosopher might not understand this language, or this argument.  Consciousness as a subjective, private realm is a viewpoint of the post-1800 world, closely associated with the emergence of liberal democracy, the ethical value which modern societies place on personal freedom and creativity, etc.  So, too, is the modern scientific world-view, the refusal to accept any teleological force or transcendental reason operating in the physical universe, the attempt to explain all evolution as chance occurrence, the physicist's preference for reductive explanation wherever possible.  These two faiths—the private subjectivity of consciousness, the randomness and contingency of the physical universe—are twin pillars of the modern world-view.  The claim that physics cannot explain consciousness is in effect the claim that these two pillars of the modern world-view are mutually incompatible.  They are like two warring children of modernity one of which must vanquish the other.  The implication is that these two viewpoints can be separated, one living on while the other fades into history.  It particular, it seems to be assumed that we can abandon our belief in physics as the ultimate arbiter of existence and still keep our modern understanding of consciousness.  This, I believe, is mistaken.  Contrary to popular belief, I opine that our modern understanding of subjectivity and of physicality are fundamentally entwined and inseparable.  If one goes, the other must go.

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There is more than a historical relation between these two "children of modernity". One aspect of our modern world-view is physicalism in the sense of belief in the causal closure and efficacy of the physical realm and the total explanatory power of physical sciences; not necessarily a physicalism which denies ontological status to abstract entities like numbers.[120] The other is our faith in the existence of subjective states of consciousness and also, which is perhaps rarer outside the modern world, our belief that the possession of subjective, private experience is the defining factor of conscious beings, and that the cultivation of one's private experiential realm, as well as the refinement of one's unique personal identity (defined in part by private experience), is the crucial human calling. This latter point of view we might usefully call "subjective humanism", or subjectivism for short. Conventional wisdom seems to have it that physicalism and subjectivism are incompatible. I argue that they were born, at least in their modern senses, at roughly the same historical moment, but this does not address their compatibility or incompatibility. I wish to present an argument, however, to the effect that there are *conceptual* as well as historical links between these two perspectives; that they are rigorously intertwined at a deep philosophical and structural level. Far from undermining each other, they actually reinforce each other. I believe this reinforcement answers Kim's inquiry as to whether arguments beyond its simplicity can be given in favor of physicalism in the philosophy of mind.

The opinion I am about to defend is rather against the grain, so let me prepare my defense in stages. To begin, let me present an objection to an erstwhile alternative approach to consciousness, namely behaviorism. This is not a popular perspective nowadays, so I am not addressing it as part of some dialectic or a surveying the field; my point instead is that there is a conceptual flaw which has not apparently received due attention even though behaviorism has been discredited. For purposes of this discussion, I will construe behaviorism as the theory that talk about qualia can be understood without ontological commitment to qualia, so long as we understand expressions like "Vajpayee is in pain" as "Vajpayee is grimacing and moaning in a

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[120] This appears to agree with how Kim (*op. cit.*, p. 35) defines "physicalism", and I defer to him.

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fashion which usually suggests a need for medical help".  Instead of reference to ontologically present qualia, this involves merely an empirical observation and then an educated guess as to the correct course of action.  My argument is that this involves ontological commitments of its own which are just as tenuous as commitment to qualia, and also that it threatens logical regress.

Suppose Vajpayee slips on the ice and falls; he starts grimacing and clutching at his ankle.  Suppose walking nearby is Niall, who happens to be a doctor.  So Niall observes Vajpayee's actions and makes the educated guess that Vajpayee needs medical attention.  We can assume that Niall kneels down, begins examining his ankle, asks him if he is in pain, etc.  If I am walking nearby I might observe Niall's actions and conclude that Niall believes that Vajpayee is in pain.  So I have an empirical theory not only of being in pain, but also of believing things.  The problem is that I define these things in terms of observable behavior, but the only way to define the *observation* of behavior is in terms of other observable behavior: for example, what it means for me to conclude that Niall believes Vajpayee is in pain is for me to behave in a particular way, perhaps turning to someone else and saying that Niall is treating Vajpayee.  As an explanatory device "observable behavior" seems to lead to infinite regress.[121]

I don't know if this regress is fatal; perhaps an argument can be given around it.  My point is that behaviorism tries to overcome any commitment to qualia by appeal to observation, and therefore demonstrates "performatively" that it believes observation to be less problematic

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[121]    A structurally related problem arises in quantum mechanics, concerning the idea that conscious observation of a phenomenon which is in a superposition of states "collapses" those states into one determinate condition.    The problem is that we could perhaps imagine the *observer* also in a superposition of states: given possible $A$ and $B$ in the observered, there could be states $A'$ and $B'$ in the observer, where $A'$ is "having just observed $A$", etc.    Why does observation "collapse" $A$ and $B$ by choosing one or the other, instead of throwing the observer into the superposition of $A'$ and $B'$?    Perhaps second observer is needed to observe the first observer and so collapse $A'$ and $B'$, but here we encounter the regress.    This problem is discussed in Gribbin (1984), p. 236.

than qualia. One point I might make is that it is hard to imagine how we might observe anything *without* qualia, but I suppose my inclination to make this point is a byproduct of my commitment to qualia in the first place, so I won't rest anything on this point. The stronger point I wish to make is that behaviorism only seems to make sense if we are prepared to accept "observation" as an undefined conceptual primitive, and, aside from the question of whether observation is any more worthy of being an undefined conceptual primitive than are qualia, the very fact that behaviorism is prepared to accept observation as such can tell us something about the commitmental infrastructure of behaviorism as a philosophy.

So, what are the reasons why we might accept observation as a conceptual primitive? One might be introspective: we clearly seem to be and believe ourselves to be observing things all the time. This is plausible, but works just as well for qualia, so it is unlikely inspire someone to choose behaviorism *in place of* belief in qualia. A second is transcendental in a vaguely Kantian sense: if structured argumentation, whether scientific or philosophical, is to make any sense at all, then there must be a social practice of rational discussion which seems to require that parties to a debate have the capacity to make observations. If there were no observations, then there presumably would be no public exercise of reason, and if there were no public exercise of reason, there would be no philosophical arguments. In particular, there would not be this very argument I now rehearse, the argument as to whether observation is better or worse than qualia as a conceptual primitive. So we have reason to take observation as a primitive because it is already a condition of possibility for philosophical reasoning in the first place.

This transcendental argument is plausible, but only if observation can be conceptually separated from qualia. In other words, a holder of this argument proposes that there is such a thing as observation and that this can be claimed without any additional commitment to qualia. It is important to note that the transcendental strategy of the current argument does not actually entail this separation of observation from qualia. The transcendental strategy, if it succeeds, entails that philosophy has as a condition of possibility the existence of observation but

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not the existence of qualia. There is nothing in the very existence of philosophy which commits us to assuming that observation depends on qualia. But this does not show that observation *does not* depend on qualia. It only shows that *if* we have reason to believe that observation does not depend on qualia, then we have reason to keep observation as a philosophical primitive and define qualia, or qualia-oriented talk, in terms of observation. It would be wrong to conclude that the transcendental argument shows, or even purports to show, that because it is not within the condition of possibility for philosophy that observation depends on qualia, then we can assume, given the existence of philosophy, that observation does not in fact depend on qualia. Whether observation depends on qualia must be debated separately.

So a behaviorist is left the task of defining or presenting observation in a manner which does not appeal or make reference to qualia in any way. Alternatively, he or she might abandon the notion that observation is "better" as a philosophical primitive than qualia on purely metaphysical grounds, but that we should keep observation (but not qualia) for some other reason, perhaps drawn from some areas of philosophy other than metaphysics. I believe that defining observation independently of qualia will end up simply shifting commitments from one place to another, without ever finding a commitment which is somehow more natural than the others; and the alternative possibility is basically a matter of choosing one's own philosophical taste. But let us run through the exercise at least for a brief moment. What does it mean to observe something? Presumably it means to come to know that something is the case, or that a certain state of affairs obtains. So we can define observation in terms of knowledge and states of affairs, but there is nothing here, as far I can tell, which is metaphysically easier than either observation or qualia. Or perhaps we can say that it means to be receptive to information concerning some state of affairs. But what is this "receptivity" and what is information, after all? It is as if we are circling through a forest of concepts looking for one concept which is like a tree at the edge of the clearing, but I see no evidence that any of these concepts is metaphysically prior to any other.

Nonetheless, I think the faith in observation as a philosophical primitive has haunted

philosophy for some time, not just the narrow behaviorist theory of mind which I am using as something of a whipping-boy, but the broad traditions of empiricism and pragmatism in general. I believe that Husserl deserves credit for examining this faith even though empiricism had a certain appeal to him, as evidenced by the phrase "to the things themselves", and also by the ghost of David Hume that sometimes creeps into his writing. Husserl did not take observation as a primitive; he exercised it, exposed it to a rigorous critique. It would be feasible to read the core of Husserl's philosophy as a "critique of pure observation" to set alongside the Kantian "critique of pure reason". And here is an entrance point for my claim that physics and phenomenology have a conceptual form in common: for both, observation is no longer taken for granted; it is something to be accounted for, its existence and possibility explained. *Why is observation?*

It seems that wherever there is existence there are states of affairs. Any minimal existent—a single particle, for example—instantiates certain properties merely by existing. Thus several states of affairs are called into being merely through the particle itself being called into being. If quantum string theory is correct, then particles (and also quanta of energy) are vibrating strings, with tiny but nonzero extension in space. They are also bent and curved in predictable patterns so that they vibrate through time; at any given moment in time, any given particle is vibrating according to a certain pattern, one which can be specified mathematically. The range of vibrational patterns which are mathematically possible correspond to the range of particle types which are physically possible. To vibrate in a certain way is to *be* a certain particle: an electron, a photon, etc. Particle interactions—an electron decomposing into a photon and photino, say, then fusing back into an electron—are strings splitting in two or combining into one. So, when a string vibrates in one of the mathematically possible ways, we have a minimal state of affairs: this particle is an electron, say. The existence of certain states of affairs is sutured into the very fabric of existence.

The concept of a state of affairs, however, involves not merely the primordial givenness of certain property-instantiations; it also involves a certain communicability over space and time

and a perpetuation over time.  Suppose Moishe is late for class.  The state of affairs involves not just Moishe instantiating a property; it is also an entity that continues to be true even on future occasions when Moishe is on time for class (he was still late *that one time*), and it is something that can be known, discussed, reported, etc., across time and space.  For Husserl, a state of affairs is an ideal or an *eidos*, and the linguistic statement "Moishe was late" *refers* to this state of affairs in the same way that the expression "red" refers to the eidetic entity *red*.  Much of Husserl's eidetic phenomenology involves deriving an eidetic theory of states of affairs from an eidetic theory of abstract particulars (such as red), with the composition of sentences from individual linguistic terms used as a guide and analogy.  The point is that for Husserl a state of affairs is an ideal entity, like numbers, or like "red" as property of objects (as opposed to "this particular red quale").  If a fundamental part of being a state of affairs is being knowable, then, alongside the ideality of states of affairs, is the ideality of the beings who know states of affairs, the "transcendental cogito".  For any state of affairs there is an "ideal observer" who can know it.

This ideal observer, however, is *ideal* in Husserl's eidetic sense; it does not exist in space and time, it does not engage in causal interaction with the physical world.  Even stronger, it is really just a *façon à parler* (and thus eliminable in a way that numbers, for example, are not).  The transcendental cogito is really just a way in which we reflect upon the mental activity of concrete minds.  What this means is that although there is for any state of affairs an ideal observer who can know this state of affairs, this ideal observer is a purely abstract construction, a conceptual slot built into the existence of the state of affairs, but having nothing beyond purely abstract existence.  To elaborate, we need a straightforward state of affairs to consider.  So imagine three material particles (for arguments' sake let us construe them as stateless indivisible solid spheres) which happen to be arranged so as to be the vertices of an equilateral triangle.  The state of affairs in question is the equilaterality of their arrangement, or $E$.  The ideal observer of $E$ is a being who observes the three particles and sees their arrangement and therefore concludes $E$.  I now want to show that although this ideal observer exists as an abstract conceptual possibility, it is harder to posit its existence in the actual world.

Given the three particles, how would a being (conscious or otherwise) come to be informed as to their arrangement?  Perhaps we would see how they were arranged.  If I wanted to do so, I would have to bounce some photons off the three particles to assess their arrangement.  (Maybe the photons are there anyway, but in any case they have now intruded into our scenario.)  So we now have added additional particles into our thought experiment.  In general, any observer would have to causally interact with the particles, maybe by bouncing photons off them, or maybe some other way.  In any case, the scenario we have is not this:


        x

    x

        x



, where the "x's" are the particles, but this:

        x

    x                                   O

        x



, where O is the observer.  The observer is part of the system.  So, although an ideal observer simply observers a state of affairs, the only way an *actual* observer can observe a state of affairs is to become "part of the system", to become one of the affairs themselves, to be subject to the same causal influences which affect the things observed.  There is no observation without causal affection.

This perspective agrees with the phenomenological take on observation, but it also agrees with modern science. Indeed, one of the crucial driving forces behind physics has been the notion of observation as constrained by physical laws. Observation is not an abstract operation but a result of information being communicated from one place to another, and there are physical limits on information transfer. In particular, either information cannot be transmitted at greater than the speed of light, or else, if it appears that information *is* transmitted at greater than the speed of light, elaborate theories need to be developed to explain how. The phenomenon of photon coupling actually shows that apparently information *can* be transmitted at greater than the speed of light. Ingenious theories have therefore been developed to explain this phenomenon, but my point is that the motivation for these theories was the conviction that information should obey physical laws. And there are numerous other important results which are due to physicists quantifying information, construing it in physical terms, and making information about a certain physical system *part of the system itself*; and the problem of whether information is lost or preserved around black holes, or at the birth or death of universes, is generating feverish debate in contemporary cosmology.

I contend that this paradigm—the information about a physical system is part of the system, and subject to the same physical laws—is perhaps the single greatest difference between modern science and pre-modern science, even science on the threshold of modernity, such as that of Isaac Newton. For example, Newton's theory of gravity implies that were a massive object to disappear the change in gravitational force would affect surrounding objects instantaneously; this seems to entail certain information being transmitted faster than the speed of light. Apparently, a handful of scientists noticed this as a potential problem even in Newton's time; but modern physics sees this as a fatal flaw in Netwon's theory of gravity and a key point in favor of Einstein. But a less technical example is readily available: belief in an all-knowing God seems to imply an ideal observer who is more than an abstract conceptual possibility, but an actually existing entity outside space and time, capable of observing all states of affairs without actually being causally affected by physical objects or being subject to the laws of information transfer.

Whether or not it had an explicit theological component, I sense that the notion of an "ideal observer" influenced Western philosophy for quite some time, and it was a major shift in perspective when this notion began to wear off. I suspect that this affects not only technical philosophy but Western culture in general, and that the shift was largely subconscious, at least within the culture at large. To take one example, consider painting. A typical landscape or historical painting from the 18<sup>th</sup> century would display, in effect, a self-contained and observable state of affairs. There is a certain body of information present, and the artist is presenting it. The foreground of the painting, and in general the regions of the canvas near the frame, are painted in as much detail and informativeness as the principle subject-matter at the center of the canvas. We are, in effect, imaged to be ideal observers of a certain state of affairs.

Take a walk through a gallery of the 19<sup>th</sup> century, however, and things are quite different. The edges of the painting will often be done in a deliberately vague or incomplete fashion. There is a loss of information or informativeness as our eye moves from the center to the edges of the canvas. A certain speck of color may be unintelligible, conveying no precise information; we cannot tell if it is a leaf, or a twig, or a chipped surface on a rock, etc. Foliage, fog, sky, merge into an indistinct haze around the edges of the scene. The colors and brushwork convey moods, as well as information. When I look at a painting of a lake, say, done in dark blues and browns, I often feel that I am actually near the water; I have the faint sense that I actually *feel* a little cold and dampness on my legs. Presumably, this is a kind of neural shortwire: my eyes are seeing scenes and colors associated with cold and dampness, so I feel a trace of certain sensations as what we might call a "phantom inference" to a typical associated sensation. Whether or not they had this term, I believe that 19<sup>th</sup>-century artists and even composers were well aware of this phenomenon of "phantom inference" and exploited it to add affective detail to their work.[122]

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[122] *Cf.* Merleau-Ponty's two articles on painting, "Eye and Mind" and "Cezanne's Doubt", which does not discuss this "phantom inference" I am proposing, but does apply his phenomenology of the experienced body

What has changed between the 18th and 19th centuries, implicitly, is the philosophical intimations which seem to accompany the idea of observation. It seems as if for the 18th-century individual, "observation", including conscious observation, is an approximation to an idealized observation which would gather all the information contained in a given state of affairs from a position outside space, time, and causal influence. It is not just that human observation is a kind of approximation to some ideal observation, but that the very concept of observation is defined relative to this ideal, so that *to be* an observation is to be in some relation of approximation to an *ideal* observation. The very concept "observation" is affixed to this ideal. For the 19th-century individual, by contrast, observation was joined to conscious experience, and perhaps defined as a certain modality of consciousness. Aside from the technique in executing a painting, which I have mentioned, consider also the choice of subjects and locales for paintings. A far greater number of 19th-century paintings (aside from still-lifes) depicted scenes indoors, inside rooms, where the edges of the canvas often coincided with depictions of walls, ceilings, doors, etc., "framing" the individuals depicted. If an earlier paradigm was publicly observable states of affairs drawn against a generic "outside", an equally prevalent Romantic and Symbolist paradigm was the private moment, the inner experience of a lover looking at a beloved, for example, a scene which by assumption is not in the public domain. Observation, in other words, is an experiential practice, an inferring of states of affairs only through the medium of private, sensory reality; observation in a sense ontologically depends on this sensory conscious horizon.

Is there any equivalent to this in modern science? For starters, physicists know that they

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to visual art. A starting point for developing an aesthetic theory of "phantom inference" might be Husserl's own brief foray into the analysis of visual art in *Ideas I* (p. 311): this condensed analysis is a good start toward analyzing how the depicted scence is both an object of perception and an object of phantasy, and, it could be argued, that as the mind hovers between taking the scene as real and as illusory, sensations which would be expected *were* the scene real could creep in via connectionistically "trigerred" associations. Since the *anticipation* of a sensation evidently involves the firing of some neural module or complex, there is plausibly a different module whose role is to *experientially create* that sensation in response to the firing of this module, even if this firing is accidental.

cannot contemplate observation in the abstract; if they conduct an experiment, they have to figure out how to observe the results of the experiment without physically distorting these results, because there is no observation possible without some kind of physical interaction. More to the point, "observation" is understood as information transfer, and information transfer is understood as essentially a physical interaction. How can information be transferred between two particles, for example? It requires some kind of mediator between them, such as a third particle. This third particle interacts with the first particles, say, and then the second, and the precise nature of this second interaction conveys certain information "from" the first particle "to" the second, so to speak:

$$x \quad i\sim\sim\sim\sim\sim\sim> \quad x$$

So there really isn't any distinct entity called "information" that get transmitted from one place to another; instead, this is just our way of characterizing what happens within the local realities of the two distinct places where the information is said to travel from and to.[123] "Information transfer" supervenes on interactions localized to an arbitrarily small segment of space and time around two interacting particles (the "$i$" and the two "x"'s in the above figure, for example). [124] The second "x" gets information about the first only by being *affected* by the

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123   *Cf*. Paul Young (1987), p. 66: "The forms constituting the central ingredients of information processes, then, are simply sets of mass-energy relations that are preserved in space-time by being transmitted between mass-energy systems and used for representational purposes. If it is true that the form characteristics of any set of mass-energy events can be interpreted as an expression of its identity, a set of forms that represents another set of forms can be said to embody a representation not only of its own identity but also of the identity of the forms it represents: Its identity symbolizes the identity of part or all of another mass-energy system. [A]ny set of mass-energy relationships in which, predominantly, mass-energy forms are directly moved in space-time [is] an energetic process."

124   *Cf*. Seth Lloyd (2006), who argues that any interaction between two particles is a kind of "computation": the

"*i*".   Information only emerges through localized affective patterns, and an object at one place in time can receive information about some other place in time only if this information is held in patterns wholly local to the object's own spatial-temporal location (which means that there must be some particle carrying information that enters this spatial-temporal location and affects the object in question).

Although I am (admittedly rather informally) discussing pure physics here, the language I have used has become distinctly phenomenological: affective patterns within the local space and time of a physical entity—in truth, is this not what qualia *are*?   The notion of qualia makes perfect sense in the context of physics, even if we are dealing with qualia as a general category here, not specific qualia such as looking red or tasting like cognac.   But, in general, physics seems to predict that *any* conscious being will gather information about distant points in space and time only because affective patterns can become present within that being's local space and time that somehow have distant states of affairs encoded within them; and any conscious being only acquires information if it is capable of being affected by physical causes which originate from the objects whose states of affairs are in question.   If we define qualia in the abstract as "patterns of affective causation localized in space and time" then we have as a purely physical principle that any conscious being must have qualia.   Of course, there is still a gap between qualia defined in this way and qualia defined phenomenologically, but I think this gap still shows progress compared to the explanatory gap where we began, between qualia and the physical world.   The problem is no longer to bridge the physicalist's world of fundamental particles with the phenomenologist's world of sensations, conscious experience, red, and cognac; the problem is now to bridge "patterns of affective causation localized in space and time" with red and cognac, and because the terminology involved in the former already has a certain

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universe "computers" what the nature of the two particles should be after the interaction.    Conversely, it is only through such interactions that the properties of one particle can affect the properties of the second particle, so that information can be "transferred".    Information transfer *is* the tendency of properties of one thing to affect properties of a second thing; the latter properties can then be used, in principle, to infer the former properties.

phenomenological resonance: "affect", "localized" (read "inner"), "space and time" (read *experienced* space and time).    Given this resonance, this second gap seems far less intimidating.


    With all of the arguments often given for different approaches to the mind/body problem, there is one point which I have not seen made, and which surprises me, even granted that I have read only fraction of all the literature out there, because it seems to me obvious and fundamental.  It is clear to me that we acquire knowledge about the external world, and I also believe that there is no way to understand this acquisition, to understand ourselves as knowing beings, without reference to our inner, qualitative consciousness.  I suspect that this is the true subject of debate: those skeptical of qualia, or even those who are epiphenomenalists or dualists skeptical of physically explaining qualia, seem to hold that we can maintain our faith in ourselves as possessing knowledge even if we drop belief in qualia or in their being physical.  In other words, we don't need to appeal to qualia, or to have any physical theory of qualia, in order to explain how we come to acquire information about the world.  This implies that there is some account that can be given of our acquiring information which does not involve qualia.  What seems to be lost in this argument is that any good theory of mind must not only account for *how much* information we get from the world but also *how little*.  The fact of the matter is that as knowing beings we are rather limited.  I may want to remember on which page Kim signals his assent to Chalmers, so that I can cite it.  I may wish I could simply concentrate for a few seconds and then "know" the answer, the way that if I forget what I ate for dinner last night, then think briefly, I can usually "jog my memory".  The fact of the matter is that information is only communicated to our minds through limited, discrete channels: colors and gradations of colors, sounds, touches, scents, tastes, and kinaesthetic orientation accompanying these.  Just as important a philosophical riddle as why I can know about the world through my senses is why I *only* know about the world through my senses, why "direct" knowledge is impossible.   These limits are a crucial component of our sense of personal identity.   Suppose, for example, that I began to have knowledge of things which I should not know—e.g., knowledge of intimate details of some other person's life, someone I have never met.   Such knowledge would presumably be quite disturbing to me, and lead me to believe that I was under the influence of some weird

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supernatural force which was violating my personal "space".  The fact that there are built-in *limits* to our knowledge is a crucial component of our subjective self-consciousness.  Physicalism is arguably alone among the candidates for a theory of mind in explaining these limits.


As long as the paradigm of human observation is as an approximation to some ideal observation which can fully and instantaneously grasp states of affairs, the problem of explaining these limits might not arise.  It could be argued, for example, that human observation is empirically limited to our sensory faculties because this is our biological nature; we as humans do our best to make our observation approximate ideal observation with the means at our disposal.  This approach is available to a world-view which has ideal observation as a paradigm and poses the limits on human observation to be mere *empirical* limits.  But recall that in the modern world-view ideal observation is not even a paradigm for concrete, limited observation; ideal observation is *wholly unrelated* to actual observation.  Ideal observation is a purely abstract concept built into states of affairs; for any state of affairs there is hypothetically an ideal observer who can perceive this state of affairs directly, without the need for physical information transfer.  In practice, the only conceivable ideal observer for a state of affairs would be the things concerned by the state of affairs themselves, and it seems problematic to call them an "observer".  By analogy, consider a truly perfect map of a territory.  The only truly perfect map would be the territory itself, and thus would not be a map.  So, too, the only ideal observer of an object $O$ would be $O$ itself, and thus would not be an observer of $O$.  To say "$S$ is an observer of $O$" implies a minimal differentiation between $S$ and $O$, even if only the grammatical distinction between the place of the subject and the place of the predicate.  The only ideal observer of the Universe would be the Universe itself.  Even if we decide to give a name to this ideal observer, such as "Yahweh", then the mere existence of this name would be a *reductio ad absurdum*.  The only possible ideal observer of the Universe would harbor toward the Universe itself an identity so absolute that even the possibility of a linguistic differentiation between them destroys it.


Although it is hard to express the implications of this in technical language, I think there

is something culturally significant about how in the modern world-view ideality has shifted from observation to existence, from truth to being. In the paradigm of the ideal observer there was a Truth or world-order which had a certain independence from the world itself; in the modern paradigm "truth" is only the identity of the universe to itself. In one paradigm, Truth is presented as a metaphysical notion to which a certain ideality inheres; in the modern paradigm, this same ideality, if it exists at all, belongs only the Existence itself. Truth, to the degree that it exists, is nothing special; wholly passive, truth is nothing more than the fact that physical things cannot help but instantiate properties in the course of their existence. What has replaced truth as the core of our metaphysics is the simply notion that things are *there*, that there is a *givenness* to the things in the universe which inheres to their very existence. This "givenness" or "thereness" might seem to be a vague and speculative expression, but I think it is fundamental to science, and therefore that we need to include it or something which means the same into the canon of technical metaphysics. Physics, too, assumes *thereness* of a given particle, even if it is not localized in space but is as a probability wave spread over space. *Thereness* does not imply singular location, but it does suggst *presence* in space and time. "Presence in space and time" is therefore the degree zero of modern ontology, the singularity at the origin of our philosophical universe. It is also, I believe, the foundation of phenomenology: the root of phenomenology is awareness, and the root of awareness is the experience that there is "something there", even if in a given moment all that is there is my own body or experience.

The challenge for phenomenology is to articulate this primordial "thereness" into a system defending the possibility of human knowledge, and, indeed, a related challenge exists for physics. I have said that physics does not really believe in "information" per se; instead, information transfer is understood in terms of wholly localized events affecting single particles. At yet, physics obviously does believe in publicly knowable empirical data and physical laws. So the fundamental challenge to physics is to reconcile its parsimonious convictions toward information and observation with its equally strong commitment toward publicly knowable states of affairs. Here, physics and phenomenology face exactly the same problem. Given that we are all locked in our own private reality—not only individual minds, but

even individual physical particles are locked in a reality defined by their locally surrounding space and time—how is public reason possible?  Husserl presents a system in which through the medium of inner awareness public reason becomes possible, and because it tries to solves, with a lot of success, I believe, a problem also fundamental to physics, physics should take Husserl seriously

Of course, there are other philosophers who construct collective reason out of inner experience, and this whole terminology is too vague to permit focus on phenomenology alone.  This expression would seem equally appropriate for John Locke, for example: we all are restricted for biological reasons to our own private store of sense-data, and yet by making intelligent inferences within that sense-data we can reach collective conclusions about the way things are.  Here, too, public reason is reached through the medium of private reality.  I think, however, that there is a fundamental difference between an empiricist and a phenomenological vision of this process.  For the empiricist, it seems to me, the process of empirical information transfer between a certain state of affairs and a human mind is understood against the conceptual possibility of an ideal observation of this state of affairs.  The human mind will grasp some proper subset of the total information to be had, and the process is one of welding up pieces of information, building up a gradually more complete picture, with the ideally complete picture present on the horizon as a limit-point.  Thus, particular sense-data are units of information whose role is to be part of an incomplete picture whose ideal completion would be that of the ideal observer.  In other words, each given sense-datum belongs not only to the actual human being perceiving something, but potentially to the ideal observer, and so the fact that any given sense-datum I employ in making an observation could also be employed by this ideal observer establishes a point of contact between myself and the ideal observer; it makes my image similar to the ideal observer's, if less complete than His.  A sense-datum, in other words, is a fragment taken from a whole which is simply the state of affairs itself; by assembling these fragments together I attain an approximation to the state of affairs rather the way I assemble the pieces of a jigsaw puzzle, and I attain a reasonably complete picture even if some pieces are missing.

Sense-data, for Husserl, work quite differently.  A sense-datum is not small fragment of a state of affairs, and a state of affairs does not emerge from a composition of discrete sense-data.  The relationship which the contents of my experience have to the states of affairs which I come to know is complex, and cannot be summarized without delving deep into phenomenological theory.  Among other things we need to explain a "sense-datum" actually is.  Suppose I see red in front of me and yellow to the left of me, and I am in a room which I know to have red walls and a yellow door.  So I infer that the door is to the left of me, and, if I desire to exit the room, I should move in that direction.  But, if I am looking ahead of me, the yellow I see out of the corner of my eye will not be present with all the clarity and symmetry of the red surface I see before me.  In reality, the wall and the door might equally be perfect rectangles, and if I were to face the door I would see a neat rectangle of yellow just as I now see a neat rectangle of red.  But, as it is, the yellow I see on the left might appear to be a vague crescent which trails out into the edges of my visual field.  Similarly, if the yellow is to the left of me, this "left" does not only mean on the left of my visual field; it also means that it is there on the same side as my left hand is, that if I were to start moving in that direction I would start by raising my left arm slightly, since we use our arms to balance as we walk, etc.  Indeed, if I think about walking that way I might feel a faint echo of sensation in my left hand as if I had actually started to move it, even when I have not: the "phantom inference to sensation" I spoke of earlier with respect to looking at paintings.  In order to see this yellow patch as its shape truly is, I would need to frame it in my vision, so I would have move my head to the left; then I would experience this movement, I would feel a certain tingling in my neck muscles and also my cheek and the left side of my forehead, and this sensation would accompany the new visual sensations I receive.  The visual field is bordered by the faint dark line where we see our own skin and eyelashes, and just beyond that line in experienced space is the origin of sensation such as tingling in the cheek muscles which accompany any change in our visual field.  So the visual field merges imperceptibly, at the margins, with the tactile and kinaesthetic field of my corporeal awareness.  But then this kinaesthetic field, which continues from my forehead and cheek down into my chest and arms and often, if I can see one or both of my hands, reunites with my visual field, but here not at the edges of my visual field but back at the center.

The point I wish to make with this analysis is that anything we wish to posit as a sense-data is caught up in a system of relations whose structure is defined by the structure of experience. The visual field, for example, is vaguely spherical: I see the dimensions of things differently which are close to me than far to me. As I type I can vaguely seem, at the bottom of my visual field, my hands moving, but they appear rather small, even though they are close to me; it's not just that I see things in perspective. The sight of my hands merges into the sight of my shirt, just as the sensation of my hands contacting the keyboard merges into the sensation of the shirt touching my skin. Within the visual field, surfaces are distorted and bent by the bending of the entire visual field around whatever I am directing attention to at the moment. I know the keyboard is rectangular, but as I vaguely see it beneath my hands it appears instead to be the shape of the moon. A particular datum—the shape of a particular physical surface, for example—has a precise detail which is defined by how it fits into the structure of my total experience. I do not, therefore, "assemble" these different sense-data into a picture of the external world. Each sense-datum owes its nature to its place in my experience as well as whatever information it carries about the external world. The emergence of a picture of the external world in my consciousness is more like the emergence of a photograph from a negative bathed in chemicals, always going through a phase of vagueness and indistinctness, than it is to the assembly of a picture out of a jigsaw puzzle. Even if the picture of that which I am now directing attention to is clear in my mind, there are on the fringes of my perception other shapes that are vague, but that potentially can me made clearer by shifting my attention elsewhere, an act which would render the current, lucid picture I have a vague memory. The phenomenological picture of perception is of a lucid image which emerges out of a vague, indistinct horizon, and this image actually fits quite well the physicists' image of the order of the world, an emergent order rent from quantum indeterminacy and superpositions of quantum states. These two pictures resemble each other much more than either resembles a more 18th-century image of a world order which precomprehends the physical universe itself and which my mind contacts whenever I perceive this physical universe.

So phenomenology has to explain how a stable image of the world, a mental picture

which I can correlate with others' whose informational content is communicated to multiple conscious minds at the same time, so that public reason among us is possible; how such a stable image emerges from the structure of my sensory consciousness, a structure so many of whose details are due to the unique topology of experienced space, and to the repeated merging and decoupling of the visual and kinaesthetic sensory fields. To bridge this gap, between the details of raw sensory experience and the stable pictures of the external, public world I perceive, the first step is to look at the properties which exist at both ends of the spectrum and which get carried from one to the other. If I have a red sense-data somewhere in my visual field, for instance, however much its experienced shape may be distorted by the overall topology of experiential space, there is still (most likely) a red surface in the "public" image that emerges from my perceptual process, and so a given property had "migrated" form the realm of sensation to the realm of public reality: a red *quale* has become a red *object*, *surface*, or *part* of an object. Thus a property like red is a kind of bridge property, instantiated both by qualia and by objects. If I see a red book, for example, we can say both that I have a red experience and that the book is red. A property of redness is being attributed to both. I believe that such correlations between properties of experience and of objects is the foundation for our knowledge of the external world.

Correlatively, I am a realist with respect to properties in both arenas. I think redness is a noneliminable property both of objects and of experiences. Obviously I am also a realist with respect to experiences themselves. I do not believe that subjective reality can be eliminated from our ontology. But in accepting (at least as the most likely hypothesis) the causal or material reduction of subjective reality to physical nature, I think I endorse the only position which makes knowledge possible. Because both the mind and objects of experience are ultimately material, there exist purely material interactions between the two. This is why correlations exist between properties of both mind and object. Objects influence our experience in ways that obey physical laws. This does not mean that we necessarily make correct judgments: we believe that the Earth is flat, for instance. However, it does mean that when we are wrong, when there are distortions in our perception, there is something systematic and thus

corrigible about these distortions.[125]   We do not need to posit any further ontological region to link mind to matter both in terms of knowledge and in terms of volition, because mind *is* matter.

In my "physicalist" version of phenomenology, the order of the macroscopic world reflects the orderly interactions among macroscopic objects, and these objects are individuated relative to this order.   This order emerges from the complexity of the quantum world; and the identity of macroscopic objects themselves emerges alongside it.   This is true of objects, and of their properties, such as being red or being transparent; it is true of consciousness, and our conscious experience of these properties.   Consciousness emerges from the material and spatiotemporal world; it is not something imposed on the world from outside.   The reality of macroscopic objects, and the stability of the order between them, is not a window onto a teleological influence operating from outside spacetime and impressing an order on the physical universe too detailed to arise within the universe by physical processes alone.   The compromise expressed by the phrase "realism without teleology" is that of modern science itself, and, I believe, can also express the compromise which defines Husserl's metaphysics.

In this chapter I have tried to refute the notion that physicalism is incompatible with subjectivism, or with a philosophy that takes subjective consciousness as its core concern.   On the contrary, I maintain, because physicalism is committed only to those entities which are at least in theory presentable to consciousness, physicalism and subjectivism can form a productive coalition against both metaphysical or teleological extravagance, and against a kind of functionalist empiricism which seeks to describe the functional order of nature without speculating on its fundamental metaphysical constituents.   Over the next few chapters, I will refine the notion that macroscopic objects and the order among them emerges from a more

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[125]   For example, our impression that the Earth is flat is *correct* when we note that the Earth is *almost* flat compared, say, to a boulder.    The error lies not in perception but in how we extrapolate *apparent* flatness to *actual* flatness.

primitive quantum-physical reality.   This emergence will be studied in property-theoretic terms, and when there is an object whose identity is emergent—a hurricane, or even a simple sphere, which may appear to be a solid object from one angle, but which at the quantum level is vaporous and complex—there is a simple property instantiated there, no matter how complex its substrate.   There is something which has the property *being this hurricane*; that simple marriage of a property with a substrate emerges within the complex weather patterns out of and against which the hurricane is both formed and individuated.   The complexity of nature at the quantum scale is compensated for by the simplicity of many of the properties which are instantiated in nature.   This, I propose, is the property-theoretic version of Husserl's "metaphysical compromise"; a way to *have* realism without teleology.   So, while we can define consciousness itself as an emergent property of matter—and so maintain the belief that consciousness *is* physical—we can also understand the properties disclosed *to* consciousness, those which are experienced and through which consciousness forms judgments, as emergent properties. Furthermore, as I will explore in the next chapter, the very *identity* of the objects which are intentionally disclosed in consciousness states is itself an emergent property.

The previous chapter took a holistic view of consciousness in relation to the environment. Environments are complex systems, and we can make sense of the environment because we are attuned to complexity and complex patterns. This is a precondition of practical, rational activity. A theory of the mind based on our practical nature, on our rational agency, resonates with a complexity-theoretic account of the environing world. This account, however, does not necessarily explain *consciousness itself*, as opposed to rational activity in general. Even though consciousness is an emergent property—and even though qualia, assuming that these are the minimal units of consciousness, are usually characterized in terms of emergent properties like *being red*—it is not clear that emergence theories offer a hopeful research program towards explain consciousness. Other than simply framing the problem of consciousness, giving an argument for why consciousness *might* be explainable—if consciousness is an emergent property than at least it is not epiphenomenal or dualistically unrelated to physical matter—emergence theory, along with complexity theory, seem most helpful in the theory mind as a way of defining environmental structures and, by extension, practical, rational activity. This chapter will consider some theories that consider consciousness experience itself.

**Sartre and Levinas.**

I will begin by summarizing some developments due to French phenomenology. Most of this work finds its source in the later work of Husserl; it often presumes that a strong contrast exists between this work and Husserl's earlier periods. Husserl's career is usually divided into three phases: the early work centered around the *Logical Investigations*, an extended middle period including such landmarks as *Ideas* and *Cartesian Meditations*; and a final period whose

main representative is the *Crisis of European Sciences*.   The middle phase is often termed Husserl's "Idealist" phase, particularly by those who read "eidetic phenomenology" as an analysis, through introspection, of an almost Platonic realm of *essences* of which we have special insight or "eidetic intuition".   Reading "middle" Husserl through the lens of idealism or Platonism implies either that we have special intuitive "access" to a Platonic realm of essences, or else, in a more Kantian vein, that we *only* have access to a realm of phenomena which exist relative to consciousness, i.e., it reincarnates the distinction between appearance and thing-in-itself.   Either "middle" Husserl is an idealist in the sense of empowering the mind to grasp a realm of essences transcending phenomena (an idealism whose opposite would be *materialism*), or else he is an idealist in the sense of suspending all belief in something real and external to me "behind" the phenomena I perceive (idealism opposed to *realism*).   Most of Husserl's followers rejected both conclusions, so they were often critical of the middle-period works themselves.

Those who read the middle period as Husserl's "idealist" phase, however, tend to exaggerate the difference between this work and later works like the *Crisis*.   The later work, so understood, "corrects" Husserl's idealism by devoting more attention to the communal and contextual aspects of consciousness.   Instead of an individual consciousness or ego confronted with discrete phenomena, the emphasis shifts to an embodied, social person for whom all perceived phenomena are part of a "life-word", where we are not only observers but *actors*, with interests and desires that affect how we perceive things.   To illustrate why this seems like a change of emphasis, consider a very simple eidetic proposition such as "all colored things are extended".   Notice how the terms in this expression acquire new meaning when read in the context of a life-world.   Extension is not just an *a priori* property of spatial things.   Our experience of surrounding space includes kinaesthetic awareness of where our bodies and limbs are, how they can interact with objects, how the tactile sensations I feel are distributed spatially across my body.   Visual perception demands calculating distances and surfaces, but correlate with tactile sensations and the position of the body and limbs: so the *space* of perception is tactile and kinaesthetic as well as visual.   We perceive the extension of individual external

things as part of a total sensory manifold in which tactile and well as visual sensations are extended.   Also, colors are not just essences: they have social and cultural meanings. Merleau-Ponty makes this argument quite evocatively near the start of his landmark final chapter of *The Visible and the Invisible*.   The image of "doubling", applied to qualia or qualitative consciousness, reappears elsewhere in French Phenomenology, as in this passage from Sartre's *Truth and Existence*:

> The world appears to a being in the midst of the world.   The In-itself does not appear before a transmundane being that would be in a state of indifferent exteriority in relation to it.   The world appears to a being in the midst of the world….   Thus perception is interiorization of the world and, in a sense, presence of the world to itself.   When I touch velvet, what I make exist is neither a velvet that is absolute and in-itself nor a velvet relative to some sort of structure superimposed by a transmundane consciousness.   I make *velvet* exist for *flesh*.[126]

Sartre's ontology is a key example of how eidetic phenomenology evolved after Husserl. Although I am using different terms, I think the theory emerging from *Being and Nothingness* and elsewhere can be summarized as follows.   First, while *states of affairs* may be part of nature (of the "In-itself", *en-soi*), *propositions*, the isolating of particular states of affairs as singular objects of thought, belong to the realm of human consciousness, of the For-itself, *pour-soi*.   To use a Sartrean example, if I have as a proposition that Pierre is not in a certain café, then I have isolated Pierre, the café, and the fact of Pierre not being there.[127]   I have etched, from the virtual lines of demarcation in the in-itself, the fixed identities of Pierre and the café, each, in turn, being objects which I focus on and thus bring to singular focus the way a photographic image sharpens as it is developed.   If propositions are, in effect, states of affairs brought to the *pour-soi*,

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[126]   (1992), p. 8.

[127]   *Being and Nothingness* (1956), p. 9.

singularized in consciousness, then so too are the components of propositions: concepts, singular objects, etc.  Consciousness does not make propositions true, but it is in consciousness that propositions—and, by extension, concepts, and discrete objects—are individuated.  Sartre evidently believes that we need to account for how categories, objects, and propositions are isolated from the totality of the existent universe and its order; how we get from Being, from the self-identity of what is, to the particular identities and natures of particular things.  This problematic owes less to Husserl than to Hegel, and it could be Sartre—and probably Merleau-Ponty and Levinas, also—modify eidetic phenomenology by reading it against the horizon of Hegel's dialectic; and it is significant that *Truth and Existence* begins with Hegel, not Husserl.[128]

Sartre, however, slowly leaves this Hegelian foundation.  The human subject, the *for-itself*, is what has knowledge, but knowledge is knowledge of the *in-itself*.  Yet we also have knowledge related, in a wholly Sartrean way, to *freedom*:

> Thus, through the upsurge of a freedom in the heart of Being, ignorance and knowledge, error and truth appear as conjoint possibilities.  But since the truth is illumination through an act and the act is choice, I must decide the truth and want it; therefore I am able to *not* want it, The condition of true being, truth is the perpetual possibility of refusing it.  This is how man's freedom illuminates itself: indeed, everything that *appears* through him, appears through temporalization on a ground where this manifestation did not exist before.  But it would be an error to regard that prior ground as Being as such, before the intervention of man,

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[128]  "What remains of … *absolute-subject* for the individual consciousness?  First of all, that it is *an* absolute subject.  Because it is first of all for-itself.  But it is only (absolute) for-itself to the extent that it is conscious of the In-itself.  And the In-itself for a consciousness that was not it.  Then *knowledge* appears." (1992), p. 4.

since temporalization rises up with men, and the before is human.[129]

"In a sense, all truth is lived as danger, effort, risk (even a "scientific" truth) and, conversely, all that is lived (in rage, shame, love, flight, good or bad faith), manifests Truth."[130]   In *Being and Nothingness*, however, written at least five years earlier, before being so deeply influenced by Hegel, Sartre more explicitly separates the Hegelian *negativity* and his own *negatité*.[131]   Here the issue is less the role of truth in human affairs as the inner structure of propositions, or, in particular, negative facts.   Where does the positive fact which is negated in a proposition like "Pierre is *not* here" come from?   Sartre argues that negation is internal to any proposition, even a positive one, and that negation is only introduced into the world by human consciousness.[132] Sartre answers the fundamentally Hegelian question—what is there, in the world, which translates from the Absolute, from Being, to isolated, localized facts, categories, and objects—by answering: human consciousness, human freedom.   However we assess his answer, what is important is how he asks the question: Sartre's question is how essences are individuated from the total world-order, which does not appear to be a problem for Husserl.[133]

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[129]   *ibid.*, p. 27.

[130]   *ibid.*, p. 8.

[131]   *Being and Nothingness*, pp. 53, 55.

[132]   *ibid.*, 58-9.

[133]   Recent scholarship has opined that an even clearer source for this problematic, though in a conceptual rather than historical sense, is Schelling: Cf. Slavoj Žižek, *The Invisible Remainder*, and Alenka Zupançiç, "The 'Concrete Universal' and what comedy can tell us about it", especially pp. 44-5, both authors part of the emerging "Slovene

Hegelian overtones are also present in the work of Levinas, to which I now turn.   They are exemplified in particular in *Entre Nous*, a one-volume reprint of a series of essays written over 40 years, but with a certain continuity between them.   I will pick up the thread in the 1976 essay "Philosophy and Awakening"[134].   Levinas begins by addressing—albeit in rather Heideggerian language—Husserl's central thesis that as soon as we become acquainted with the existence of something we become acquainted with some of its properties.   "[T]he agreement between thought and being takes place….It is the feat of perception: the original union of the open and the graspable in the world, the given and the apprehended—…the ideas of knowledge and being are correlative and refer back to the world".[135]   After contending that Husserl implicitly opposes Hegel, Levinas then notes that there are nonetheless certain parallels between them.   The point seems to be that Husserl retraces a certain dialectic in conceiving the coexistence of objects and their properties: properties can be *logically* separated from objects of which they are, in Husserl's terms, "moments"; yet the existence and the nature of an object is synthesized in the object itself: for it *to be* is for it to be its nature.   It appears that for Levinas this is a metaphysical assumption which Husserl not only fails to fully disclose, but which also contradicts his own command to "return to the things themselves": in effect, that Husserl's realism undermines his "suspension of belief".

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(or 'Ljubjana') Lacan" school.    Their productive project of bridging Lacan and German Idealism is also exemplified, with regard to Kant, by Zupançiç's *The Ethics of the Real*, which has some parallels to other treatments of Kant in French or French-oriented theory (e.g., Lyotard's *Lessons on the Analytic of the Sublime* and Mikel Dufrenne's *The Notion of the A Priori*).    Other than Hegel, however, it is harder to find direct links of scholarship and influence between German Idealism and French theory, though certainly Lacan was aware of (and probably inspired by) Kant.

[134]   *Entre Nous* (2000) pp. 77-90.    Note that *Entre Nous* is the title of the English translation as well as the original.    The complete title is *Entre Nous: Essays on Thinking-of-the-Other*.

[135]   *ibid.*, p. 77.

Levinas uses the term "doxic theses" to express experienced belief about how things are:

The "beyond language" promised by the *Logical Investigations* does not spare those investigations themselves the necessity of stressing the irreducible role played by linguistic signs in the constitution of meaning; in the *Ideas*, Husserl affirms that doxic theses underlie all conscious life, which then is apophantic in its most intimate structure, at the point of becoming discourse in its mental articulation….On the other hand, one cannot ignore the uninterrupted reference, in Husserl, of consciousness to an identified being; consciousness as thought of the Same.   The pre-predicative toward which analysis proceeds, as if to put logical thought into question, knots itself rights away around *substrata* which are the support for all of the formal modifications of the logical.   And thus the substantive, the nameable, the entity and the Same—so essential to the structure of re-presentation and of truth as the truth of presence—remain the privileged and primordial terms of consciousness.   But above all, phenomenology itself isolates these structures by a reflection that is an inner perception and in which the descriptive process "synchronizes" the flux of consciousness into knowledge[136].

There is a lot going on in this passage, so let me point out three distinct ideas being presented.

First, it is important to remember the link in Husserlian thought between *essences* and *meanings*.   Linguistic meaning is derived from the eidetic realm in the sense that for any linguistic meaning there is a corresponding essence or universal; language does not create *its own* meanings; it *finds* them already present in the world.[137]   Going from *linguistic* to *eidetic* meaning is an essential part of knowledge: if we *know* the world then our language should lead us beyond itself toward the world, it should be like a scaffolding which can ultimately be torn

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[136]   *ibid*., 81.

[137]   Though Husserl did perhaps anticipate the insights of speech act theory, in which language, or at least social convention, *does* create meanings.   However, properties fixed by speech acts are nonstandard properties, and even they originate from social convention, not language *per se*.

down; coming after a discussion of Hegel, Levinas implies that Hegel and Husserl share this view of language.   Levinas points out, however, that even when we consider eidetic and not linguistic meaning, our judgments of the world still have propositional ("apophantic") form.   In other words, our judgments are structured *like* a language, a kind of "language of the mind" ("discourse in its mental articulation").   Does this mean that we cannot remove the "scaffolding" of language?   Not for Husserl, because behind a judgment there is something a judgment is *about* ("identified being", the "pre-predicative", "*substrata*").   There is a kind of progression sketched out here: starting from linguistic meaning (the word "red", for example), we discover behind it an essence or eidetic meaning (redness as predicate, as something in the world), and behind that states of affairs in which something *is* red, and finally the thing itself *which is* red. There is red the word, red the concept, the state of affairs "this table is red", and finally the substrate which is the table itself.   At the end of this progression is "identified being": things which in existing automatically instantiate properties, whose *nature* simply *is* their existing. This convergence of existence and nature, however, means that to know the object is not only to be informed about the object, it is actually to be *in contact with* the object: the object *includes* its nature, but has *existence* above and beyond the specific *way* it exists ("truth as the truth of presence": there is no truth without presence, without there being *something present* of which propositions are true).

If we read *essences* as *properties*, then we return to the question of what connects properties and substrata.   I believe that properties inhere in substrata simply by substrata being what they are: they instantiate properties merely by existing.   This is fully consistent with eidetic contingency; in fact I believe it is equivalent to eidetic contingency; Levinas, however, is trying to call attention to this as a metaphysical *assumption*.   He also points out that this assumption rests on certain premises, such as the transition from linguistic to eidetic meaning and from "truth" to "truth of presence".   Despite its moderateness, moderate realism still has decisive commitments to a particular idea of truth and of existence.   Levinas, however, we must emphasize, does not exactly *dispute* moderate realism.   He might dispute the lack of transparency in assuming it, but he accepts it, in an elegant turn of phrase, as "the wisdom of

everyday life and the wisdom of nations, guaranteeing universality to the science born of perception"[138]. I have tried to connote something similar to "the wisdom of nations" with the phrase "public reason". It reflects a perpetual theme in Levinas, namely the relation between the public and the private, a relation he analyzes in unique ways. Levinas seems to read Husserl as analyzing the publicly accessible world, the world in which objects exist outside my own consciousness because they are also in the consciousness of others. Indeed, Husserl argues in the *Cartesian Meditations* that my perceptions are consolidated by confirming that they are shared by others, so that there is an intrinsic intersubjective element to all perception. Even if there is not actually someone there to "second" my perceptions, the fact that others could *potentially* share them is part of what makes perceptions what they are (and makes them distinct from sensations and other "private" phenomena). Furthermore, the *Cartesian Meditations* were originally published in French rather than in German, with Levinas being the translator; since Levinas is also credited with being the key figure in introducing phenomenology to France, it is appropriate to say that the *Cartesian Meditations* was the work which defined Husserl's basic ideas for French phenomenology and that their further development of his work was affected by it being this text, instead of perhaps the *Ideas* or the *Logical Investigations*, which played this role.

It seems, then, that Levinas perceived Husserl's fundamental theory of intentionality as a theory of the publicly accessible world, a theory of the transcendence of objects to individual consciousness which is the *precondition* of the public realm. In other words, intersubjectivity is intrinsic to perception, but the externality of objects to consciousness is intrinsic to the public realm. There would not *be* a public world if there were not real, external objects. Note that the *Cartesian Meditations* are often seen as a transitional work for Husserl, between his middle and late periods. Certainly Husserl here is rejecting solipsism (if he had ever accepted it), but the *way* he does so requires a realism of external objects. In any case, Levinas does not really argue

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[138]    *ibid.*, 77.

against external realism as an assumption; I think he is concerned more with the overall connotations or philosophical consequences of this emphasis.   Levinas truly does believe, I think, that Husserl's interest in consciousness was biased toward our cognitive competence in perceiving the publicly accessible world: that Husserl sought to understand the machinery of consciousness that enabled us to all reach more or less the same conclusions in perceiving the same phenomena.   Husserl certainly analyzed the private, qualitative side of consciousness, but primarily, it can be argued, so as to analyze how private experience gives rise to public representations.   What Husserl does not emphasize, for Levinas, is private experience for its own sake, the "ipseity" of the human individual who is the subject of moral dignity or whose welfare is the responsibility of others.   Leaving aside the details of this critique—which for Levinas applies still to the late Husserl and then also to Heidegger—what is important is that Levinas has introduced the public/private distinction as a key interpretive category for *reading* Husserl, and the influence of this hermeneutic can be detected in Sartre, Merleau-Ponty, and others.

**Phenomenology and the public/private distinction.**

A key organizational principle of French phenomenology, then, is to try and "map" the public/private distinction onto the conceptual expanse of Husserl's philosophy.   Even in the passage I quoted, Levinas is surreptitiously exploring the boundaries of the public and the private.   The term "presence" suggests the independence of external objects from consciousness, but it also suggests the presence of sensations to consciousness: qualia have a "thereness" and a continuity through time which resemble physical matter.   In general, Levinas does not understand the public/private distinction in the same way that most philosophers of mind do.   In identifying qualia with the private and concepts with the public, I think I am reflecting common sense; for Levinas, however, things are a little more complicated.   Despite the fact that no one

else experiences my qualia, for Levinas the private is not exactly the same as the qualitative. This is because qualia share some ontological structure with substrata, with "the substantive, the nameable, the entity": there is a *nameability* or *referentiability* of qualia which make them at least in part *external* to consciousness. More to the point, *nameability* or *substantiveness* are the "markers" of real, external existence, especially insofar as logically prior to states of affairs are things whose properties are the basis of states of affairs. In other words, if we are committed to an ontology of *things* and not of *states of affairs*—to the idea that the root of existence are temporally and spatially extended things that are just *there*—then there is something "existential" also about qualia which, themselves, are extended and "just there". While not exactly public, qualia are not exactly private either. This argument is reminiscent of Sartre's theory of embodiment, in which the body, although a source of sensations and in that sense of private awareness, is also something that can be seen and harmed by others. Levinas, also, talks of the "vulnerability" of the body. French phenomenology, in effect, has a more nuanced understanding of how the categories of public and private relate to qualia and objects.

We can say that the private is not qualia themselves, but instead the subjectivity which is aware of qualia. Qualia *happen* to me, which means they are something *presented* to my awareness, something external at least in part. In Husserl, the self is essentially the ego-cogito, the unity of consciousness: its role is largely *formal*, we might even say functional, not significantly different from the Kantian transcendental unity of apperception. For Heidegger, Levinas, Sartre, and Merleau-Ponty, however, the self is something more: there is a kind of determined effort to phenomenologically *find* the self, to turn descriptive phenomenology into existential phenomenology. The course of this investigation differed from thinker to thinker. In the case of Levinas, the "search" for the self was intertwined with ethics, or more precisely with Levinas's attempt to establish morality as "first philosophy", something more fundamental than ontology itself. For Levinas, to think in terms of qualia is still to think ontologically, still to think in terms of presence and temporal extension. Levinas finds a gap between subjectivity and qualitative consciousness which perhaps was not recognized in the 19th century. In this way Levinas's philosophy turns from ontology to morality, a progression which is traced in *Entre*

*Nous*.   In "Useless Suffering", from 1982, he explores the relation of qualia and selfhood:

> Suffering is, of course, a *datum* in consciousness, a certain 'psychological content', similar to the lived experience of color, sound, contact, or any other sensation.   But in this very 'content' it is an in-spite-of-consciousness, the unassumable…."Unassumability" that does not result from the excessive intensity of a sensation, from just some quantitative "too much", surpassing the measure of our sensibility and our means of grasping and holding; but an excess, an unwelcome superfluity, that is inscribed in a sensorial content…It is as if suffering were not just a *datum*, refractory to the synthesis of the Kantian "I think"—which is capable of reuniting and embracing the most heterogeneous and disparate data into order and meaning in its *a priori* forms—but the *way* in which the refusal, opposing the assemblage of data into a meaningful whole, rejects it; at once what disturbs order and this disturbance itself….The denial, the refusal of meaning, thrusting itself forward as a sensible quality…[139].

*Pain* is quale that cannot be assimilated into propositional content: pain can inform me of states of affairs, such my being injured, but there is no one-to-one correspondence between pain-qualia and properties of objects akin, say, to red as quale and as predicate.   "Suffering, in its woe, in its in-spite-of-consciousness, is passivity.   In this case apprehension, a taking into the consciousness, is no longer, strictly speaking, a 'taking', no longer *the performance of an act of consciousness*, but, in adversity, a submission—and even a submission to submission, since the "content" that suffering consciousness is consciousness of is precisely this same…suffering"[140]. In other words, something has failed in the Husserlian idea that the content of consciousness is an *act* of consciousness.   "What counts in the non-freedom or the submission of suffering is the concreteness of the *not*, looming as an evil more negative than any apophantic *not*.   This negativity of evil is probably the source or kernel of all apophantic negation….All evil relates

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[139]    *ibid.*, 91.

[140]    *ibid.*, 92.

back to suffering.   It is the *impasse* of life and of being—their absurdity—in which pain does not just somehow innocently happen to 'color' consciousness with affectivity"[141].   The capacity for suffering, and the moral responsibility which it founds, complicates the purely epistemological vision of intersubjectivity which we find in the *Cartesian Meditations*. Intersubjectivity therefore means two different things for Levinas: the "formal" role of others in consolidating our perceptions, and the "moral" order which results from the power which I can hold over another by causing suffering in him or her.   The interplay of these two kinds of intersubjectivity is a fundamental Levinassian theme.   With those with whom I share a common public world, I also share a common conceptual scheme; there is a community of mutual, conceptual understanding, a similarity in the kinds of things we are equipped to identify in the world.   There is also, within communities, a sense of moral responsibility, and ethical bond. Levinas is quite concerned with two different kinds of ethics: the moral bonds between people of the same community *and also* the moral responsibility I owe to "the other" in general, and with their interrelationships, such as whether communal moral bonds weaken or reinforce my sense of universal human dignity.   But a central part of this is identifying the role which community plays in my perception of the world, in my acquisition of a conceptual scheme.

Concepts imply a publicly shared world and a shared conceptual-scheme; they situate me in a particular community, or social environment.   Within this social context I am also aware of myself and others as moral agents.   On the other hand, qualia belong to my private reality but they are, first, often assimilable to concepts, and when they are not, they often "turn against" me as expressions of my vulnerability.   Thus qualia appear in several guises: as the "entry points" for concepts into our mind, as contents of an inner world, and as a force over which I am powerless and through which I can be rendered powerless before others.   *Community*, also, plays two roles: both the bond between people who share a conceptual scheme and the bonds between those who recognize each others' moral worth and agree *not to* exploit their capacity for

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[141]   *ibid.,* 93.

suffering.   The architecture becomes more complex, but once again the fundamental terms in this discussion are qualia, concepts, the public and the private, intersubjectivity and community; this will remain the iconography of French phenomenology through Sartre, Merleau-Ponty, and Ricoeur.   Even though Levinas is not *only* concerned with qualitative consciousness, however, I want to point out how refined the *language* of qualitative phenomenology has become.   Levinas is far clearer in his ability to actually construct a sense of subjective ontology than is Husserl.   In the above passages I can point out several phrases which seem to give linguistic form to the idea that there are subjective objects: "*datum* in consciousness"; "'*color*' consciousness with affectivity"; "thrusting itself forward as a sensible quality".   There are perhaps antecedents to this kind of vocabulary in Husserl.   What Levinas does more effectively, however, is to disambiguate the (potential) *propositional content* of qualia from their "affective" content more precisely than Husserl himself had done, even if the kernel of this distinction is in Husserl's distinction between *noesis* (the <u>*experience*</u> *qua* experience; the "feel" of the experience) and *noema* (or the <u>*experienced*</u> *qua* experienced).

In other words, there is red as a property of experience, and as a property of objects; as a property of objects it is also a component in proposition judgment.   As a property of experience, it is also an *affective* content, a *something that happens to me*.   Husserl seems to have recognized that qualia have correlative eidein which are "contents" or "units", in this case of judgments or propositions; and that qualia in their experiential dimension are synthesized into a unified sensory manifold.   But Husserl does not seem to have fully expressed the affective dimension of qualia, or qualia as affective contents.   It is interesting that two of the most important early extensions to Husserl's phenomenology addressed precisely this point: Levinas's first full-length text, *The Theory of Intuition in Husserl's Phenomenology*, written in 1930, and *The Phenomenology of Edmund Husserl* by Ludwig Landgrebe, Husserl's assistant who edited (and may have partially written) *Experience and Judgment*.   The idea of qualia as *affective contents* in consciousness, and of *concepts* as part of communal conceptual schemes, were brought to the fore in post-Husserlian phenomenology.   Almost automatically, they brought with them a public/private distinction.   The traditional Husserlian idea of essences is now a kind

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of bridge between qualia as affective contents, even as objects in a subjective ontology, and concepts as belonging not to individual consciousness but communities.   Husserl, in effect, emphasized only one part of this continuum, namely the individual consciousness which "converts" affective qualia to propositional contents; *Experience and Judgment* is a kind of extremely detailed analysis of precisely this transition.   This intermediary, the individual consciousness and its doxic qualia, gradually becomes less and less important.   Perhaps this evolution culminates in the works of Julia Kristeva and Felix Guattari, in which there is *only* affective consciousness and societal norms, in which all reason is public reason.   The moment when French phenomenology crossed over into French poststructuralism was the moment when eidetic intentionality, which after Husserl became in effect a bridge between affective consciousness and public reason, died out completely as a topic of analysis.

At a certain moment in French theory, individual consciousness became suspect as a topic of analysis and also as an ontological given, as if individuality is itself an illusion.   Starting with the late Husserl, the role of the individual in shaping the concepts it has at its disposal decreased, and the role of the community proportionally increased, and this culminated in the Structuralist notion of personal identity as purely epiphenomenal, as an "effect" of underlying economic, linguistic, societal, even libidinal structures; the I or self lost all causal agency. When this picture started to seem too bleak, thinkers began to return to individual consciousness, but only in its affective dimension.   Individuality was no longer seen in my propositional awareness, my cognitive competence: my powers of knowledge were not really "mine"; they belonged instead to the language that I used, to the social norms that I obeyed.   Personal identity itself, personal agency, was found instead in the affective dimension of my own consciousness: in the affective nuances of poetry, for Kristeva; in the pure intensity of lived experience, for Bataille; in the externality of sensation or the "Real" to language or the "Symbolic", for Jacques Lacan.   In other words, in a kind of Neo-Romantic aesthetic fervor and in at least indirect opposition to Levinas's attempt to complicate things (an example of which I discussed above), at a certain moment in French theory qualitative consciousness *was* the private realm.   Levinas's objection, however—that affective contents, despite being experienced only by myself, were

still, nonetheless, cut from the same ontological cloth as external objects, were still in a way external to myself, still defined relative to the categories of presence, "thereness", referentiability, temporal extension, etc.—continued to play a role.   In the focus on affective consciousness, we see a desire to *ground* consciousness and selfhood in the world; to ontologically *fix* consciousness or, Levinas would say, to define consciousness in an ontology structured by how we define material things.   Levinas asks why we should define consciousness, and consequently ourselves, in terms of there being something present, there being a subjective *ontology*, a realm of subjective "objects": sensations, qualia, and the like; rather than define ourselves in terms of morality, perhaps even in terms of religion, in terms of our relation to others.

And yet—Levinas has no doubt perceived very clearly that there is a *desire* to plant personal identity in the ontological ground of affective experience.   He has sensed in this, in other words, a subjectivity, a vision of personal identity, powerful enough to be worthy of detailed critique.   Moreover, it is a vision which can coexist with a more moral vision of human identity precisely because affective experience, which, in the best of times, can give us a sense of rootedness to material being, can also, in the worst of times, expose our vulnerability to others. The real problem which Levinas has with this particular combination seems to be that it conceives of an excessively *procedural* morality, one which relies on law and policy to prevent the exploitation of others' capacity for suffering, a morality which owes more to the Geneva Conventions than to the Talmud.   It undermines, in other words, his desire to displace ontology from the philosophical foundation and replace it with ethics, because this is an ethics which rests itself on an ontological theory.   Subjective ontology itself, which promotes affective being to real being and affective contents to real objects, leads to an ethics which affirms Levinas's notion that "all evil leads back to suffering", and all ethics leads back, as Peter Singer might say, to its absence; yet it does so without actually inverting the order of logical entailment between ontology and ethics.   The doctrine that qualia lie outside the main pattern of dialectic ontology becomes refigured as the belief that qualia are not subject to the internal relationalism, the *differance*, which limits all language (and all systems of concepts); and this belief is then

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critiqued in ways not that different from Wittgenstein's "private language" argument.   In effect, this deconstructs the quale/concept distinction; in finds in this distinction a desire for ontic certainty, for a *ground*.

Levinas's objections aside, these comments show the issues which are important to phenomenology as of, say, 1970: affective consciousness; concepts as belonging to conceptual schemes and public reason; the waning importance of the *cogito*, of propositional consciousness (as opposed to individual *affective* consciousness), of the single, methodologically isolated intentional relation.   The classical Husserlian analyses would be rehabilitated, at least to a degree, as the site of original phenomenological work shifted from France to England and North America at about the same time that phenomenology gave way to Structuralism and Post-Structuralism on the continent; however, even in returning to Husserl it seems as if Analytic phenomenology has been saturated, in spirit if not by explicit influence, by the evolution which happened after Husserl.   Indeed, the classical rationale for Husserl's eidetic theory does not really seem operative even in the neo-Husserlian phase of English-language phenomenology.   David Woodruff Smith or Ronald MacIntyre are not *really* interested in essences like redness or even in essences linked to ontological regions, like "living things".   It is significant that Smith and MacIntyre return to Husserl's eidetic analysis so as to develop a theory of *reference*, whereas it would be closer in spirit to Husserl to develop a theory of *semantics*.   *Husserl and Intentionality*'s semantics focuses almost solely on the meaning, or essence, of referring terms.   As I am about to argue, David Woodruff Smith's approach to phenomenology, despite being a "return to Husserl", is similar in some important   respects to phenomenology *after* Husserl.

**David Woodruff Smith's phenomenological ontology.**

Woodruff Smith presents this theory of mind in his contribution (the chapter "Mind and Body") to the *Cambridge Companion to Husserl* (1995), which he also edited. Further developments of this theory can be detected in *Mind World* (2004), but I will start with the former article. He begins with an ambiguity he finds in Husserl, that he then exploits:

> Husserl fashioned an intricate ontology of mind and body, coordinated with a rich phenomenology of our awareness of body and mind, as well as an epistemology of the kinds of evidence we have about body and mind. I propose to excavate and reconstruct Husserl's ontology of mind and body, along with the coordinate phenomenology. The result is a *monism* of substrata (individuals or events) and a *pluralism* of essences, as well as senses, of body and mind (which may apply to the same individuals or events). This many-aspect monism (not Husserl's term) is obscured by the superstructure of Husserl's "transcendental idealism", which does not set well on the monistic foundation. We shall remove (in a sense, deconstruct) that superstructure, revealing and restoring the underlying monism.
>
> On Husserl's account, each concrete experience falls under two high-level essences or species, called Consciousness and Nature respectively, so that the mental and physical…are two aspects of a single event. *Qua* acts of consciousness these events are defined primarily by their intentionality, their representing or being "directed" to something. *Qua* brain events they are defined by natural laws of physics, biology, etc., which concern not intentionality but the physiology of neural activity. In Husserl's ontology, these two aspects are dependent parts, or "moments", of the same event, and the two parts instantiate respectively the very different essences Nature and Consciousness.[142]

One might conclude from this that "multiple aspect" theory is a kind of identity theory. Unfortunately, Woodruff Smith seems to reject this interpretation, or at least to distinguish his theory from physical reductionism.[143] Of course, identity theory is not *necessarily* reductionist. If one object exists in multiple regions, it seems that any one of those regions can be singled out

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[142] "Mind and Body", p. 323.

[143] *ibid*., p. .

by a scientific explanation of that object's properties.   There seems to be no harm in assuming, for example, that an object's mental properties can be explained in terms of its physical properties.   Perhaps Woodruff Smith does not want his multiple-aspect theory to be construed as an eliminative theory, where non-physical properties are regarded as illusory or unreal.   This would be an unlikely reading, however, given that it would seem to force the conclusion that the "aspects" other than the physical are illusory, so that the theory is not *really* a multiple-aspect theory at all.   Since the theory seems to foreclose this misreading, it is hard for me to find the harm in considering it a kind of identity theory.   Woodruff Smith does suggest that an "idealist" variation of his theory is also possible, which may foreclose a reductionist reading.   However, this idealist variation is not the one which he is committed to.   I think the realist variant which he does endorse is compatible with identity theory.   Here are his comments about the two variants:

> Recall that we are assuming a realist reading of Husserl's ontology.   The idealist reading is easily grafted on at this point.   Simply drop the natural world and the objects of experience from this picture, leaving only the "pure" structures of consciousness: ego, experiences, their noemata, and their horizons, all mapping myriad patterns of intentionality—without an external world, but with a phenomenal world in which, from the ego's point of view, nothing is changed.   Or, alternatively, pull the natural world into consciousness, by identifying natural objects with systems of phenomena or noemata.[144]

The phenomenological "reduction" assumes that all external phenomena can be reduced to patterns of consciousness, which is a reduction in the opposite direction than a physicalist reduction of consciousness to physical states.   Since Woodruff Smith's multiple-aspect theory is potentially useful for theories committed to both types of reduction, he may be reluctant to describe it as specifically a *physical* reduction theory.   However, these two reductions are not incompatible.   The fact that scientific and phenomenological methods are different does not mean that the *results* of these theories are incompatible.   We can follow the reduction in one

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[144]    *ibid.*, pp. 341-2.

direction if our goal is to analyze conscious experience from the inside, and in the opposite direction if our goal is to fit consciousness into the scientific world-picture.

I also think that a property-theoretic reading of Woodruff Smith's theory is possible. He invites this via the term "instantiation" of essences. Consciousness instantiates both properties associated with "Nature" (physical properties) and properties associated with "Consciousness" (phenomenological properties). "Nature" and "Consciousness" designate ontological regions, and regions can be defined as sets of properties. Since this is a monistic theory, we have single objects; those objects can instantiate both physical properties and phenomenological properties. In other words, there are not physical objects (or physical states or events) and then, separately, mental objects (or states or events). There are physical objects which have the capacity of instantiating mental properties.

Having distinguished the two regions Consciousness and Nature, Woodruff Smith makes further subdivisions, drawing closer to Husserl's regional ontology:

> Husserl ramified this dual-aspect ontology in interesting ways. The bodily aspect of a human being he divided into two aspects called the "physical body" (*Körper*) and the "living body" (*Leib*). The mental aspect he divided into three aspects called the "soul" (*Seele*) or "psyche" (*Psyche*), the "human being" (*Mensch*) or "spirit" (*Geist*), and the "pure *I*". My physical body, the material *I*, is my body *qua* physical: this body as defined by purely physical attributes of space, time, matter, and causality, and so instantiating the essence Nature. By contrast, my living body, the animate-organism *I*, is this body *qua* living: "my body" as defined by intentional attributes of volition and kinesthesis as well as spatiotemporal-material attributes, i.e., my body as that organ which I move by will and whose movement I am aware of kinesthetically. My soul or psyche, the psychological *I*, is then that aspect of my living body that "animates" it…And my spirit or human *I* (*Ich-Mensch*) is then I *qua* human being: an embodied, personal, social being who belongs to the world-of-life, or "life-world"….[145]

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145 *ibid.,* p. 324.

So Husserl and Woodruff Smith identify several different regions or subregions, which I understand as different families of properties. These families also form "networks" constituting realms such as the social and cultural environment and the "life-world". A reductive analyses of these regions is one that shows how instantiations of the associated property types can be explained in terms of instantiations of one particular property-type, such as physical properties. But analysis need not be confined to this reduction; there are other interrelationships between these regions that can be explored.

Along these lines, Woodruff Smith observes how these various regions of human reality exist within the region of Consciousness:

> I experience myself fundamentally as having a physical body (*Körper*), which is a material thing with spatio-temporal location, material composition, and causal interaction. As a living organism or animal, however, I experience my body as "animated" (*beseelen*) by my soul (*Seele*) or psyche (*Psyche*), and thus as a living body (*Leib*), an animal organism. Furthermore, as a human being (*Mensch*) or human I (*Ich-Mensch*), or as a person (*Person*), I take myself as having a spirit (*Geist*) insofar as I am a member of a social world, with a history, culture, and morality. These levels of sense concern not only oneself but others. By means of empathy (*Einfühlung*), I experience other human beings as living human organisms with their own psyches or souls, and furthermore as fellow human persons with their own spirits or forms of humanity ([sections] 43-37 [in *Ideas II*]).
>
> In drawing these distinctions Husserl is separating structures of *sense* or noema in virtue of which we experience ourselves as human, as living bodily organism, and as mere material object….A noema or noematic sense is the intentional content of an experience, whereas the essence of an object is an objective aspect of the object itself, transcendent to consciousness.[146]

The different regions of the body, culture, etc., are also distinct kinds of experience. If

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[146]    *ibid.,* pp. 347-8.

we are committed to a physical explanation of consciousness, we can add that these regions also, most likely, have associated with them distinct neurological systems, or capacities.  I would argue that this is a result of evolution.  It would presumably have been beneficial for our progenitors to recognize animals as distinct from rocks and other inanimate things; we can assume that mechanisms evolved to recognize that difference instantaneously.  The same could be said for recognizing other human beings.  There is evidence that the brain has highly evolved capacity to recognize a human face.  This was probably true of the earliest hominoids.  As tools and language evolved, there probably evolved alongside them distinct cognitive structures governing their use.  Their existence altered the environment or life-world so that the brain acquired these structures, in the course of adjusting to its environment.  The infant encounters not only inanimate objects like rocks, but tools, and hears not only the sounds of nature, but language.  It is likely that the neurological capacity to use and understand language and tools derives from the natural process of tracking, classifying, and reidentifying the objects and sounds of one's environment.  These are processes the brain does anyhow, but in doing so with respect to a tool, for instance, the brain becomes sensitized not only to the tool's shape or other material characteristics, but the actions people do with it, who uses it, in which circumstances or social situations, etc.  Similarly, for language, in the course of recognizing sounds heard before, if those sounds are words, an infant likely recognizes the recurrence of patterns such as other sounds, the gestures of speakers, the way speakers respond to each other, etc.  Extremely sensitive to recurrence in *patterns* of stimuli, the repetition of structures of language, and of patterns of human activity in the life-world, cause these patterns to be etched permanently in our neurology.

The capacity to recognize patterns, to classify objects and stimuli based on important patterns in the environment, to possess a cognitive map of the structures and processes in the environment, are all features of the "animal" mind: they are how an animal can track its prey, sense the coming of winter, or orient itself geographically.  These capacities are likely also the foundation of the evolutionary transition from the "animal" to the "human" mind: from tracking prey to tracking the occurrences of a spoken word; from orienting oneself in a natural landscape

to orienting oneself in a social world, etc.   Both the animal and human brain are equipped to identify structures in the environment; it so happens, however, that the environment of the human being has distinct structures, ones defined by language, tools, social conventions, and the like, and the human brain has to accommodate those structures at the expense of other structures predominant in the natural world.

So we can plausibly associate Husserl's ontological regions with neurological structures or cognitive capacities.   Among these regions, one part of Woodruff Smith's discussion stands out.   In the region of Material Nature, Woodruff Smith not only asserts that we have a material body; he also talks about a domain of *experience* associated with our bodies *qua* material: "I experience myself as having a material body…with spatiotemporal location, material composition, and causal interaction."   "On Husserl's analysis, our sense of human being, the sense 'human *I*', has a stratified structure…the higher levels of sense depend or are founded on the lower levels"; where the physical body is the most "fundamental"[147].   The category of "Material Nature", which is the fundamental ontological region for reductionist, physicalist theories, has an experiential correlate, where it is also the fundamental region for defining "our sense of human being".

Woodruff Smith, however, does not explain in detail which experiential forms belong to this region and which to other regions.   He does not distinguish, for instance, the experience of the physical body from the experience of my body animated "by my soul…or psyche"; "as a living body".   Within the range of my experiences, which ones cause me to experience my body in the region of Material Nature, and which ones in the region of Animal Nature?   This is not clear, but it seems reasonable to say that the experiences of the former category include experience in its basic *qualitative* dimensions, qualia themselves; so qualia, as experiences, are experiences *of* the body *qua* Material Nature.   Here we need to distinguish qualia and

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[147]   *ibid.*, p. 347.

sense-data: insofar as a red sensation, for example, is part of a judgment like "this book is red", then the red quality itself is not assigned an ontological region; it is "attached" to an object and considered as a property of that object.   However, we can also isolate a sensation and take it as an object of its own, in which case it is treated as a property of experience, not of an experienced object.   We can say that it is a *noetic* as opposed to a *noematic* property, where "noesis" is Husserl's term for experience itself as compared to the intended object of an experience.


When we discuss our experience of Material Nature, it would seem that we are discussing our experience of inanimate, nonliving things, but this is not entirely correct, since most things we would put into that category really belong to our "environment" or "lifeworld" and therefore are already experienced relative to our own needs and concept-structures.   Objects like a book or a rock our part of our environing world, which is an "emergent order" of the physical world. Leaving aside emergent objects or properties, the region of Material Nature would seem to be one which we can only experience indirectly.   After all, we do not directly experience electrons or protons.   We can perhaps cognize this region through our study of physics, but this is a matter of thinking *about* Material Nature rather than experiencing it.   However, if the previous paragraph is correct then we do indeed experience Material Nature, and this experience *is* the qualitative dimension of consciousness.   We experience electrons, for instance, whenever we have tactile sensations.   Of course, we cannot combine the experience of objects of material nature with a cognitive act by which we construct an image of these objects, the way we can with macroscopic objects: our experience of a book allows us to form an image of the book which captures some of its properties.   Our experience of an electron, by contrast, does not allow us to form an image of the electron.   There is not, alongside the experience itself, a mental "picture" of the experienced.   Still, there is no reason why the concept of experience must include the formation of such a picture, so I think it is accurate to say that our experience of qualia *is* our experience of Material Nature.   This gives qualitative experience a special role in our consciousness in general, because through it we are exposed to the most fundamental ontological region.   Assuming the reduction of all physical regions to Material Nature, there is a parallel reduction of all dimensions of consciousness to that of qualitative experience.

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**"Multiple aspect monism" and reductionism.**

To be sure, "multiple aspect monism" is not *necessarily* a reductive theory, though it is surely consistent with reductionism.   A different situation applies to Woodruff Smith's more recent "triple aspect" theory.   In his *Mind World* from 2004, he argues as follows:

The nature of any entity, I propose, divides into three aspects or *facets*, which we may call its form, appearance, and substrate.   In an act of consciousness, accordingly, we must distinguish three fundamentally different aspects: its form or intentional structure, its appearance or subjective "feel", and its substrate or origin.   In terms of this three-facet distinction, we can define the place of consciousness in the world.[148]

Thus:

1. The *form* of an entity is how or what it is : its whatness or quiddity—the kinds, properties, relations that make it what it is.

2. The *appearance* of an entity is how it is known or apprehended: how it looks if perceptible (its appearance in the everyday sense), but also how it is conceived if conceivable, how it is used if utilizable—and how it is experienced or "intended" as thus and so.

3. The *substrate* of a thing is how it is founded or originated: how it comes to be, where it comes from, its history or genetic origin if temporal, its composition or material origin if material, its phylogenic origin if biological, its cultural origin if a cultural artifact—in short, its ecological origin in a wide sense, and ultimately its ontological origin in basic categories or modes of being….The structure < Form, Appearance, Substrate > thus defines a special system of ontological categories.   [T]he world includes attributes (of entities), minds (to which entities may appear), and contexts of foundation or origin (from or within which entities come to be).   There may be possible worlds that lack such things, but our world has this much structure, and our ontology and phenomenology are accountable to this three-facet

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[148]    *Mind World* (2004), p. 11.

structure of the world.[149]

He goes on to show this structure in different kinds of entities, material and otherwise.   For a piece of quartz, "form includes its shape, its color, and its type, quartz"; "appearance includes what it looks like from various angles and under various lighting"; "substrate includes it physical crystalline structure, as well as its geological genesis"; for an electron, "form includes its mass, charge, and spin"; "appearance includes its observable position and momentum"; "its substrate includes the matter field (from which it emerges per quantum field theory)"; for a pencil the form is "its structure of graphite in wood plus its function…"; its "appearance includes what it looks like and what it feels like…"; its "substrate is its origin…made of certain materials" each having "physico-chemical structure…produced in certain parts of the world, in specific cultures, their trade following established routes"; this substrate also "includes the historical development of writing, writing instruments, and the invention of the pencil" so "includes not only its physical composition (down to quantum structure) but also its cultural genesis"[150].   He also gives the example of a computer, finding his three-facet structure mirrored in the "three-schema architecture for database design, distinguishing a computer program ('conceptual schema'), its implementation in hardware (plus operating system, etc.) ('internal schema'), and the user's presentation of what the program does ('external schema')"[151].

This theory is made more complex because Woodruff Smith includes both material composition and history in the substrate (I am not sure why the historical, genetic dimension

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[149]     *ibid.*, pp. 17-8.

[150]     *ibid.,* pp. 20-1.

[151]     *ibid.,* p. 21.

cannot instead be considered part of the "form").   However, the complexity is explained in part by the fact that this theory should apply to ontological regions in general and because most of the objects in question exist in multiple such regions: consider a pencil, which is a material object, an object in the environment, a cultural artifact, etc.   Woodruff Smith's earlier multiple-aspect approach is still relevant, therefore; but it is now supplemented with three additional aspects or three *facets* which apply *within* each region.   At the same time, however, each facet can be treated as a unity across regions, so that the substrate includes the substrate understood at one region and again at "lower level" regions: this is why the substrate of a pencil includes both its material composition and its historical origin.   A simpler theory might argue that the substrate of a pencil would be, say, electrons and quarks; but these, too, have appearance and form.   One cannot single out one ontological region as substrate, another as appearance, and a third as form:

> Indeed, notice how wildly different are the things that serve as *substrate* for different entities: materials or parts from which an object is composed; the field in which a physical particle exists; the genesis of an individual through time; the evolutionary track (or "clade") of a biological species; the cultural history and use of an artifact;…even the cultural genealogy of our values (in Nietzsche's idiom) and of our language games and other forms of life (in Wittgenstein's idiom).   What these things share, what makes these things play the role of substrate in very different entities, is the form of ontological *derivation* or *emergence* (in different ways!) from things more fundamental, the form of ontological *foundation* or *dependence* on things in the wider context of the entity.[152]

    This three-facet ontology applies to consciousness itself:

An act of consciousness—my experience of thinking, seeing, or doing such and such—is an entity with three facets:

1.   Its *form* is its structure of intentionality, its being directed from subject toward object through a content or meaning, with inner awareness of itself ("apperception").

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152   *ibid.,* 22.

2. Its *appearance* is how I experience it, "what it is like" for me to live or perform this act of consciousness.

3. Its *substrate* is its origin or background conditions including brain activity, psychological motivation, cultural ideas or practices, and the biological evolution in the form of mind.

[In] this three-facet ontology, an act of consciousness is *distributed* in its nature through its form, appearance, and substrate. This is not to say that there are three kinds of entities bound together, say, items of brain, meaning, and "feeling". Rather, a particular mental act is one entity with a nature that divides into three fundamentally different aspects or *facets*.[153]

Woodruff Smith then refers to his work with Ronald MacIntyre as an example of analysis of the form of consciousness, and argues that Husserlian, descriptive phenomenology is in effect an analysis of its appearance. The most interesting part of the discussion concerns the analysis of the *substrate* of consciousness. This apparently is outside of phenomenology proper: "the *form* and *appearance* of consciousness are to be studied in their own right in phenomenology… whereas the *substrate* is to be studied in relevant disciplines in the physical, neural, biological, and cultural sciences"[154]. He then argues that "the familiar ontological proposals in recent philosophy of mind, from reductive to eliminative materialism, from functionalism to computationalism…", among others, incorrectly try to explain "intentionality, qualia, [and] subjectivity in…the substrate of consciousness, rather than its form and appearance"[155].

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[153] *ibid*.

[154] *ibid*., p. 31.

[155] *ibid*.

The argument seems to be as follows: intentionality is part of the form of consciousness, and qualia are part of its appearance; because these things are ontologically different from the substrate, we should not analyze the substrate as if its properties can explain the existence of intentionality and qualia. This is consistent with the idea that they are emergent properties of the substrate; Woodruff Smith even points us in this direction ("what makes these things play the role of substrate in very different entities, is the form of ontological *derivation* or *emergence*…from things more fundamental"). A hierarchy of levels or ontological "depth" seems built into Woodruff Smith's concept of substrate itself. However, Woodruff Smith recognizes several different kinds of "ontological derivation or emergence". If "ontological derivation" for him *meant* material composition, then we could call his theory a kind of identity theory. The complexity of his concept of "substrate", however, makes it equally complex to relate his analysis to the conventional categories of identity theory, functionalism, etc.

To a degree, this is because Woodruff Smith is not solely interested in the qualitative dimension of consciousness; he is equally concerned with intentionality, and in addition with the social and cultural aspect of the mind. Intentionality is not a superstructure laid over the foundation of qualitative consciousness; for Woodruff Smith, and for phenomenology in general, intentionality is just as fundamental to consciousness as are qualia. Indeed, I would argue that intentionality is subject to introspective analysis precisely *because* intentional and qualitative states usually go together. The patterns of our attentional directedness tend to reflect fluctuations in our qualitative experience. Suppose I am reading, focused on a page in front of me, and then I hear footsteps behind me. For at least a moment, I am distracted from what had before been my focus, and I attend to the new sound. Qualia by their very nature command our attention; part of what it means to *be* a quale is to be something that alters my attentional pattern in some way. To be sure, there are many qualia which recede into the perceptual horizon, so that I am dimly aware of them without actually attending to them. However, an unexpected shift in my qualitative surround—the intrusion of a new, unexpected sensory element into my sensory manifold—will invariably pry my attention away momentarily. This is the fundamental structure of human intentionality, even though our minds are also capable of intending and

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attending to abstract entities, which have no sensory element as they are being attended to; and even though changes in my attentional focus can be a result of conscious choice as well as the intrusion of unexpected changes in sensory stimuli.

To a degree, the relation between qualia and intentionality is an empirical matter.   It is probable that they belong to two different neurological systems, one of which tries to keep attention focused in one place and one which "monitors" the environment for changes which should be attended to.   Thinking in terms of evolution, it makes sense that our consciousness would evolve respecting a balance between the need to keep attention focused in one place (when tracking prey, for instance) and the need to be able to shift attention almost instantaneously (e.g., to be able to quickly respond to danger).   This would also apply to artificial systems which, depending on our preferences, we could either call intentional or functioning as if intentional.[156]   Suppose I were designing a robot to travel into dangerous areas—a mine field, a volcano, etc.—equipped with visual and perhaps auditory sensors.   I would want the robot to be capable of fixing attention on one object, perhaps photographing it or performing tests on it, while have a secondary system which monitors changes in the environment and can respond to danger (falling rocks, say, or explosions).   Designing such a system from scratch, I would have to decide what kind or what degree of change in stimulus should trigger a disruption in the algorithms governing the robot's fixing attention on one task.

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[156]   Brian Cantwell Smith (*On the Origin of Objects*) has an interesting discussion of "artificial" intentionality.    I prefer to say that these systems *are* intentional, as opposed to merely simulating intentionality. If a robot picks up and photographs a Martian rock, for instance, I think it best to say that it is *intending* the rock, in that its actions are calculated so as to gather information about the rock.    This implies a functional definition of intentionality: intentional systems are ones which are capable of changing their state so as to gain information about an external entity.    Cantwell Smith distinguishes this from pseudo-intentional "tracking", exemplified by a sunflower, whose stem rotates so that its petals are aligned with the sun (p. 202).    He argues that the intentionality of animals tracking prey, for example, and from that sophisticated, human intentionality, evolved from this more primitive "tracking".

Perhaps this could be achieved by having a separate algorithm evaluate existing stimuli and deciding whether something falls above some threshold: for instance, evaluate all incoming sounds and signal an alarm when sounds over a certain volume are detected.   This describes a structure, process, or algorithm within the "software".   However, a similar effect could be achieved within the "hardware": the robot might have sensors which are only activated, i.e., only materially altered, when some element in the environment is sufficiently pronounced.   Suppose, for example, the robot had material somewhere that generated an electric current in the presence of a dangerous gas, this current then connected to the robot's processing unit in such a way activation of the current automatically triggers execution of a routine to move the robot, thereby escaping the potential danger.

This discussion alludes to the distinction between hardware and software, or more generally, between two different ways in which a system interacts with its environment.   One possibility is that changes in the environment, or simply information from the environment, are encoded in some form and then analyzed (the "software" model); the alternative is that external changes trigger material effects that bypass the analytic mechanisms, the way that we instinctively drop a hot object rather than decide to drop it after become aware that it is dangerously hot.   A legitimate intentional system, it seems, exhibits a combination of both models.   Any system which gathers information about the external environment must be receptive to material influences from that environment; there must be some physical cause/effect relation between the environment and states of the system.   An intentional system should be conceptualized as divided between a part whose state is *materially affected* by the environment and a second part which "encodes" the state of the former part and subjects it to analysis.   For example, a robot might have a light-sensitive screen which converts patterns of light on its surface to electrical patterns.   This part of its system—the part which undergoes material changes as a result of light, changes including the generating of an electrical current, and sends that current on to some other part—might then be attached to a system which converts the resulting electrical pattern to binary data which can then be analyzed.   Qualitative consciousness seems to be the human equivalent of the former system (human "hardware", at least as it is

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reflected in the neurological system or area which governs conscious awareness), whereas intentionality belong to the latter (human "software").   What makes the human sense-organ different than, say, this hypothetical light-sensitive screen on a robot is that changes in the material state of the sense-organ cause changes in *conscious awareness*; consciousness itself is a separate system connected to both the sense-organs and the analytic portions of the brain, a system which robots and similar, artificial intentional systems lack.

Returning to the example of hearing footsteps behind me, I might well turn and find the origin of the sound; in that case, my intentional object is not the sound itself but their source. Typically, I intend not sensations but objects.   However, there may be a brief time before I have identified the source of a sensation and shifted my focus onto that source; my intentional system is so constructed that I do focus attention on sensations themselves, or more precisely, sensations affect me in such a way that I instinctively direct attention to them.   Indeed, for sufficiently strong stimuli I cannot help *but* attend to them, which is why we cannot simply "block out" pain. Therefore, there is a certain core where the qualitative and intentional systems or aspects of consciousness overlap; and Woodruff Smith seems to consider this the most fundamental structure within consciousness, the ontological core of consciousness as region.   If this is true, however, notice that this core is precisely the part of the conscious system which is materially affected by the external environment; the part of the system which cannot be described in terms of the encoding or analysis of information, but is instead where we are conscious specifically of the *material state* of our neurological system, a state which, materially altered by the environment, enables us to acquire information about the environment.

**Consciousness and information.**

Consciousness does not only acquire information about its environment; it acquires this

information in a specific way, namely, material changes in the environment trigger material changes somewhere in the physiological nervous system, which "register" in our qualitative, conscious awareness, in addition to triggering analytic processes within our cognitive, conceptualizing systems.   A system without qualitative consciousness, which in effect *analyzes* but does not *experience* the environment, cannot be said to be in the same "state" as a human person even if it reaches the same "conclusions".   A robot which identifies a wine via some chemical analysis, and a human which identifies it by taste, are not in the same state, even if they reach the same conclusion as to the identity of the wine, and even if the human brain is also doing chemical analysis.   The difference is that the latter chemical process includes somewhere in its chain of effect the triggering of changes in whatever system controls our conscious awareness, and the robot has no equivalent to this system.   Whatever causal processes are at work in the robot's reasoning, there is nowhere in the causal sequence a conscious *awareness* which is triggered.   All this seems to pose problems for functionalism, at least a kind of functionalism which identifies mental states as dispositions to accept certain propositions as true, or which analyzes the cognitive powers of the mind in functional terms.   It does not rule out a functionalism which "quantifies" over qualia: if for any given quale there exists the function of causing me to be conscious of *this* quale, a functional state which might theoretically be realized in different ways.   But to quantify over qualia we must recognize qualia as objects of a kind which can be referred to, and so offer an ontology of qualia, a criteriology of their existence and individuation.   It seems that many, perhaps most, functional theories fail to do so.[157]

As far as I am concerned, reflections like these force a non-eliminative identity theory on

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[157]   Consider for example blindsight, which is discussed by Woodruff Smith and Searle, among others. Blindsight is a disorder where patients disavow a consciousness of, say, an object shown to them, and yet are able to correctly answer questions about it.   Woodruff Smith remarks that this mysterious knowledge is less reliable than that of ordinary perception, but appears to extrapolate this to a hypothetical case where a blindsight patient has exactly the same beliefs as an ordinary person, but with certain gaps in their conscious experience (*Mind World*, pp. 80-1).   But he does not consider blindsight perception and ordinary perception to be functionally alike.

us: material interactions occur between the environment and consciousness because ultimately consciousness *is* material.    Although certain aspects of consciousness—problem solving and abstract thought, etc.—can be analyzed in functional terms and independently of the specific material composition of the brain, the most fundamental stratum of consciousness, the sensory awareness which grabs our attention and unifies the intentional and the qualitative systems, is something material: a material region whose emergent properties include phenomenal qualia, just as the emergent properties of other material regions might be heat waves or electromagnetic fields.    So what is the relationship between *this aspect* of consciousness and the brain or the nervous system?    Perhaps identity theory is a hindrance to the study of *other* aspects of consciousness.    As I just suggested, much of the mind's cognitive abilities should be analyzed in functional terms, where we abstract from the material composition of the brain even if it turns out that the mind, as functional system, is too complex to be realized in any *other* kind of material system.    We should analyze capabilities like understanding language, visual recognition, and abstract thought, as if they could be modeled in systems with radically different material form.    As such, it pays to have a functional, rather than identity-theoretic, conception of the relationship between the cognitive capacities of the brain and the brain as material region. The question is: does a similar conceptual gap exist between the nervous system and this *other* dimension of consciousness, this qualitative core of the intentionality?    For myself, I think that the kind of conceptual gap that exists between qualia as experienced and as theorized in neuroscience is a kind which is consistent with an emergent identity theory, and does not require a weaker theory of their interconnections, such as a functionalist or a dualist one.

None of this is to suggest that Woodruff Smith is himself an identity theorist.    However, I think he would endorse my arguments at least in broad outline.    In a discussion of Whitehead's ontology, for example, he gives favorable mention to Fred Dretske's discussion of information where "cognition is a complex transfer of 'information' from the environment to the knower, but this information-processing is conceived as a 'natural' process, like causation, and the

'information' transferred is not what we usually think of as a 'proposition' in the mind."[158]
Woodruff Smith finds parallels between this concept of information and Whitehead's ontology
(specifically, his notion of "prehension"), but here I am interested in the subsequent discussion,
where Woodruff Smith analyzes states of affairs:

> Frege posited a realm of "thoughts" that serve as "sense" (*Sinn*) expressed by language but are
> entities distinct from both the physical and the mental [and] Husserl posited…"noemata" that
> serve as "sense" (*Sinn*) or content of mental acts including judgments and are expressible in
> language but are distinct in ontological kind from mental acts, physical acts, and cultural
> institutions (including words).   But Whitehead's conception of propositions is strikingly
> different, and genuinely novel, because a proposition per se is neither component nor content
> nor object of a mental act…or of a speech act or linguistic expression.   Even in causal
> "feeling", a proposition is "what is proposed" for feeling….We might call this hybrid entity a
> *state of affairs*, following a well-established tradition in Austrian philosophy, including
> Husserl and the early Wittgenstein, for whom a state of affairs (*Sachverhalt*: literally "things
> related") is a complex entity formed by a number of objects instantiating a determinate
> relation (or one object instantiating a determinate property or species)….Whitehead finds for
> "truth" a distinct role from that of "actuality" (becoming, concrescence), even while defining
> a proposition as rather like a state of affairs.   Remember, the "actual world" of an entity is the
> nexus of (other) actual entities prehended by the entity.   So a proposition felt by one actual
> entity is *true* just in case it is conformal to the relevant actual world of the entities that are
> logical subjects of the proposition felt….Whitehead divines a subtle line between truth and
> actuality [opposing] a classical [view], that a proposition is a content of thought or language
> that *represents* a state of affairs beyond thought or language.[159]

Apparently, this alludes to the idea that beliefs are intrinsic to our fundamental experience of our
environment; we *experience* beliefs.   Most of our beliefs do not result from a conscious

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[158]    *Mind World*, pp. 225.

[159]    *ibid.*, pp. 226-7.

analyzing of data; as soon as there is perception there is a belief in the thing perceived, and in its having the properties it is perceived as having.   It also alludes to the idea that our beliefs are beliefs about our environment seen as "life-world", as a site for our practical activity, where objects are cognized relative to our needs and conceptual categories.   I have argued that this environment should be seen as an "emergent order" of a more fundamental reality, and this may be suggested by the term "prehension".   I want to draw attention, however, to how Woodruff Smith again connects Husserl and Wittgenstein, continuing a thread he had hinted at before in the "Mind and body" article some nine years earlier.   Here the *Tractatus* is not mentioned by name, but again there is a suggested parallel between Husserl and Wittgenstein on the structure or form of states of affairs.   Here, though, we also have a contrast between states of affairs and propositions: in effect, propositions are the mental or linguistic positing of states of affairs, states of affairs abstracted as objects of thought or judgment.   States of affairs appear to be latent structures in the environment, most of which we experience in a participatory way without framing in specific acts of judgment; when we do so, the structure of a state of affairs is consolidated into propositional structure.

In other words, states of affairs are a kind of intermediary between the surrounding material reality and our acts of judgment.   This reality concretizes into an environing life-world whose structure gives form to states of affairs.   In other words, one structure exists within material reality itself—one not directly cognized by the human mind; a second structure is a kind of emergent order within this reality, which we can cognize because its objects or, to be a little more impressionistic, its "singularities" are relevant to our interests and cognitive capacities; finally, this structure is further concretized in particular acts of judgment.   If we think of the first structure as determined by the properties of the *thing in itself*, this has decidedly Kantian overtones, albeit with a greater emphasis on the practical, interactive, kinaesthetic relation between the mind and the environment.

What I am emphasizing here is the emergence of human judgment from the structure of material reality, with the structure of the environment as an intermediary.   Thus it involves the

mirroring and transformation of structures.   However, judgment cannot be analyzed solely in terms of this hierarchy of structures; after all, my judgments do not depend only on the structures of my environment and those which I can cognize.   Here, Woodruff Smith precedes his discussion of propositions and states of affairs with the language of "information transfer" between mind and environment.   He points us away from a functionalist description of this information transfer: this transfer instead is a "causal" or "natural" process.   To repeat: "the 'information' transferred is not what we usually think of as a 'proposition' in the mind"; in light of the later discussion, this seems to anticipate the distinction of propositions and states of affairs.   It seems as if this information is transferred *through* the structure of states of affairs. To put it differently, the *content* of information transferred between the environment and the mind reflects, or is reflected by, the states of affairs which obtain in the environment.   However, this information transfer is not *only* a transfer of informational content.   Information is not *only* content or structure, or else the description of information transfer as a "natural" or "causal" process would, I maintain, be nonsensical.   Information is encoded in structures of varying material foundation, but information must have *some* material base, and all information transfer must be a change in material structure, along with perhaps an actual material entity (a quantum of energy, for instance) literally being mechanically transferred from one place to another.

I suggested that the conceptual independence of qualia from their physical base implies the existence of possible worlds where the same qualia (or at least ones with the same characteristics) have a different base; the same can be said, I think, for the life-world environment.   This environment is composed of macroscopic objects, and these objects could instantiate the same relational properties even in a world with a fundamentally different physics. If we agree to call the theory of mind that Woodruff Smith presents here, with its gestures toward later Wittgenstein and later Husserl, and perhaps Pragmatism as well, an *interactional* theory, then this theory is distinct from identity theory.   Alongside a functionalist account of cognition, we have an account of the patterns of interaction or participation between mind and environment. There are many possible worlds in which our minds have the same cognitive abilities, the same functional structure, but a different material basis; there are also many possible worlds with a

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different physics but the same environmental patterns and therefore the same patterns of interaction between mind and environment. So there are many possible worlds with a different set of material or physical properties, where we have the same mental reality as we do in this world, at least in many respects; and, thus, the structure of these aspects of mind is independent of the material laws of our own world. If these were the only aspects of mind, this would invalidate identity theory. However, there is another aspect of mind I have discussed here, which we could call its *affective* dimensions: the root of both qualia and intentionality, the capacity of external affects to force my attention in one way or another; my fundamental receptivity to patterns in the world, a receptivity which takes the form of *awareness*. *This* aspect of consciousness cannot be so readily conceived in a world with a different physical base.

So, although Woodruff Smith is quite conscious of the phenomenological shift toward the "life-world", the coordination of structures of perception with emergent structures in the environment, he also presents an account of "information transfer" between mind and environment which suggests that both, at their foundation, or at least at a substrate level on which they are "ontologically dependent", belong to material reality. Based on his analysis, to deny the materiality of consciousness would demand an account of information transfer or information encoding which was *not* ultimately dependent on a material substrate. The life-world is an emergent order of a material reality, but we cannot deny this material base without denying that the structure of states of affairs is *not* an emergent order, and/or that information can exist or be transferred without a material foundation. As a result, I contend that the emergent theory of states of affairs is a logical consequence of how thinkers like Searle and Woodruff Smith demarcate the ontological region of qualitative consciousness. If qualia are objects whose existence and individuation fit the phenomenological story—objects existing relative to conscious awareness, individuated by the attentional patterns and capacities of this awareness—then the emergent theory of states of affairs holds. The fact that an ontology of states of affairs, of the world-order itself, which seems much more general than the ontology of conscious states, can be seen as a logical consequence of ontological assumptions applying to this latter, restricted domain, is perhaps the only sense in which modern phenomenology is still a

form of Idealism.

Phenomenology and the various theories of emergence or of complexity which have shown such promise in recent science form natural partners.   Emergence or complexity theory tends to regard macroscopic objects of the everyday world as systems rather than singular things. Likewise, the environing world we are conscious of is understood as a structured system, or as a site where numerous structured systems interpenetrate.   David Woodruff Smith gives us several ways to build a bridge between phenomenology and emergence/complexity theory.   His approach to   horizonal awareness and cognition—which includes the experiential horizon around given perceptual acts, and the "background knowledge" which informs particular perceptions and judgments—gives us a way to analyze the relation between consciousness and its environment, this environment itself being understood in emergence/complexity-theoretic terms.   But his approach to semantics and reference, such as the "adverbial" theory of mental states, also helps us bridge emergence/complexity theory and traditional metaphysics and semantics.   The emergent and complexity-oriented paradigm regards identity as an evolutionary feature of a system, not a conceptual primitive.   Any implicit statement of identity—when I talk about a hurricane, for example, the implication that *there is something* which is that hurricane—presupposes that some underlying system (e.g., global weather patterns) take on a particular structure such that within that structure some identifiable and individuatable subpattern is present, and that this subpattern has an "identity"; that it can be referred to and has continuity through time.   We need to bridge *this* identity with the simpler paradigm demanded by traditional semantics, in which identities are the static meanings of words or referents of referring terms.   Woodruff Smith's adverbial theory can suit this purpose: a hurricane, say, is weather behaving hurricane-like.   The identities of this theory are not *things*, but rather manners of existing, or dispositions.   The concept "hurricane" refers, not to a set of things, but to a propensity for certain types of behavior.   There *is* a hurricane when there is weather behaving hurricane-like.

From the perspective of phenomenology, this emergence theory is a way to characterize

the environment where consciousness finds itself—the immediate spatio-temporal environment, but also the socio-cultural environment, the cognitive resources needed to represent the phenomena in the everyday life-world.   But while the emphasis is on these large-scale natural and cognitive patterns, this cannot be the whole story.   The defining feature of consciousness is affective experience, and qualia; and a quale by definition is not a large-scale pattern but a discrete entity, a singular *thereness*.   Qualia embody the indexical structure of consciousness, the ability of consciousness to rest attention in one place, and to be aware of this static potency. Qualia are means by which the phenomenon of consciousness is exemplified for consciousness itself: any single quale is potentially a paradigm of consciousness in general, a vehicle for consciousness to encounter its own subjectivity reality in the world.   In qualia, consciousness can regard itself as *there*, in the world.   This indexical structure is central to qualia being the foundation of self-awareness, to the notion that my recognizing conscious experience as my own is the central vehicle of my personal identity.   Phenomenology, then, needs analytic resources to handle both the global order and pattern of the environment and the particularity, the local presence, of individual qualia.

## Conclusion

We have seen arguments in favor of reductionism and emergentism; and areas in which phenomenology tends to lean toward one side of this debate, and then the other. Here I wish to survey the landscape one last time.

Our position on the reduction/emergence debate depends, in part, on our favorite theory of mind. One thing which I think is obvious is that we, as practical, rational agents, live in a complex world. The macroscopic world where we exercise most of our rational powers is one which is described, and which can only be described, by emergence theory and complexity theory. This is because almost all of the properties which are relevant or causally efficacious in this environment are emergent properties. If we understand science as rooted wholly in our typical rational activity—as a mere formalization of our natural need to understand the environment—then the emergentists's view of science is obviously accurate. Low-level reality, in this case, is at best an idealization; the true domain of science is high-level reality, reality at the scale of "natural" human intelligence. This is also the theory of science which is consistent with a functionalist theory of mind. Theorizing the world on levels below the scale of human perception requires a leap of imagination, a willingness to combine indirect observation and a mental picture into representations of purported actual, external reality. A printout from a bubble chamber, which demonstrates the existence of a particle, must be accompanied by imagining the particle in spacetime—and yet this is not an imagination of an imaginary scenario, but *using* the imagination to picture what is theorized as *actual* spacetime. Such cognitive maneuvering between observation, imagination, and reality, is, I believe, beyond the reach of a mind whose operations are restricted to those

consistent with functionalism[160].

Emergent explanation appeals to us, I think, because it resonates with our natural cognitive activity: observing patterns, forming models of our complex environment.   Reductive explanation also appeals to us, however, because it resonates with other aspects of our mental life.   Reductive explanation breaks reality into small parts, and tried to explain highly localized space-time regions in minute detail. This seems analogous to our powers, as sentient beings, to focus attention on one small region of our sensory space, to think about, dwell in, or try to explain one single quale.   Qualia themselves, little presences in their own local space-time, are a kind of conceptual analog to fundamental particles of matter and energy.

I believe, then, that *because* we are sentient beings, possessing qualia, that we have the conceptual resources to *understand* reductive explanation.   By "understand" I mean not only understand the math, or understand how a theory is supported by observed data.   I mean understand in the deeper sense of actually perceiving the reductive theory as a theory of *reality*; of understand how it is supposed to fit into our picture of "how the world is": for example, understanding the mathematized spacetime of the theory as "real" spacetime, the spacetime of everyday perception; understanding the matter and energy of the theory as the matter of everyday things around us and the energy we perceive via light, heat, sound, electric shock, etc.

Conceptually, then, we are poised to understand both reductive and emergent theories: both find

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[160]   Recall my argument from Chapter @: how would an intelligent but nonsentient robot understand quantum theory and other fundamental physical theories?   How would it understand fundamental concepts like space, time, matter, and energy, which we understand by abstract and idealizing from everyday, conceptual experience?

resonance in our mental life; both have analogs in the structures of consciousness.

The *phenomenological* approach to the reduction/emergent debate, then, would be to claim that both sides are valid; both methods and perspectives are rooted in the structure of the mind and shed light on the nature of reality. There are reductive *and* emergent phenomena in nature, and our mind is attuned to both of them. The best theory, then, is one which combined reduction and emergence: it is necessary to develop a theory of the reductive base, but also necessary to develop a theory of how higher levels emerge from this base. Even if the laws *governing* this emergence are found at the lowest level, we may only be able to *discover* these laws through a different perspective, through a provisional paradigm shift: by analyzing emergence in general, as a distinct scientific discipline. Emergentism and reductionism should be seen as distinct research projects, not as incompatible views of natural reality.

This compromise, however, does skew in favor of reductionism. Reductive science has always accepted the need for separate theories to explain higher-level phenomena: after analyzing down to the reductive base, we need to analyze up again to the everyday world. This is why physics is not chemistry or biology, and why no physicist would believe that the successes of physics should lead to the elimination of chemistry or biology departments. Reductively inclined physicists have welcomed the formal development of emergence and complexity theory because they help formalize the bridge from reductive base to high-level theory. Emergence theory as *method* is consistent with, and an extension of, reductive science.

Emergentism, in its stronger forms, opposes reductionism at the level of ontology and world-view: it is more than just a method of doing science; it is a philosophical perspective which casts doubt on the ontological assumptions guiding reductive science. Emergence theory challenges the vision of the lone particle, in its local environing spacetime, as the canonical example of physical reality. This

canonical picture of the material region, however, is not arbitrary. It has its own foundation in consciousness and its own intuitive plausibility to human thought. Emergentism wants to appeal to a different picture, one of complexly organized phenomena and systems, as the canonical foundation of science; this picture also has resonance in the structures of the mind. But I am not convinced that the second picture is intuitively more plausible, as a canonical image for science, than the first.

My argument that qualia and qualitative experience provide an intuitive basis of reductive theory *against* the strong-emergent ontology may seem puzzling, because qualia themselves seem to be emergent properties of the nervous system. To this object I would reply the following: first, even if qualia are emergent properties, this does not bear on the role they play in giving us cognitive insights on the nature of reductive physics or the physical world it describes. Our whole minds, after all, are emergent systems of our brain, yet we believe that our minds can understand and "do" reductive theory. Qualia may be emergent properties in nature, but they are the reductive base, I believe, for the human and social sciences. Second, I am not sure that qualia *are* emergent properties, or at least, that they can be explain by emergent analysis. They are clearly emergent in the weak sense that one single nerve cell, I suspect, cannot experience qualia, whereas a large collection of them manifestly can. But I am not sure any structure of principle of emergence or of collective organization will explain qualia themselves. Perhaps qualia will actually be explained by a theory which comes from the heart of the reductive viewpoint, such as quantum mechanics.

With this in mind, I'd like to offer my own hunch as to the kind of research program which may be most likely to yield some progress on the problem of consciousness and qualia. The following will be purely speculative; it is not backed up by any empirical research, although it is inspired in part by some current theories of mind, such as Roger Penrose's.

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To begin, I would like to discuss one fundamental issue I have with functionalist and functionally oriented theories of mind. These theories assume that consciousness can be explained as a functionally specified patterns of organization among particular objects, such as nerve cells. I do not mean to suggest that functionalism necessarily assumes that nerve cells are the smallest functionally relevant components of the nervous system, but, for the sake of argument, I will use "nerve cell" to mean a minimal functioning unit in systems yielding consciousness. Assuming there are a finite number of nerve cells and a finite number of different (functionally relevant) states a single nerve cell can take on, there are a finite number of functional states which the whole system can take on. Any device which can take on a comparable number of states can presumably be programmed to model neurological activity, and, if consciousness is functional, such a device would presumably be conscious.

We seem to have an argument, then, that consciousness can be "realized" in many different kinds of physical systems: living things, computers, even populations of living things (such as the nation of China). I do not dispute the weaker possibility that there may be conscious entities in the universe other than silicon-based life forms, but I find a flaw in the stronger assumption that the physical composition of an intelligent system is irrelevant to the question of whether or not it is consciousness. That stronger claim rests on the assumption that two systems which are functionally identical are equally likely to be conscious, and that, by extension, there are no relevant distinctions can be made between functionally identical systems. In other words, if we conclude that two systems *A* and *B* are functionally identical, there is no sense in which we can *contrast* them, no different *between* them, which could be relevant to explaining whether or not they are (or one of them is or is not) conscious.

A popular example of functional identity is a computer program, such as Microsoft Word, which can run on different platforms. The Word run on Windows, we can assume, is functionally identical to the Word run on Unix and on Macs. Functional theory, in this case, assumes that there is no way to

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distinguish between these different version of Word.   By analogy, consciousness might be realized in many different systems, which would be analogs of "operating systems" like Windows and Unix.   In real life, however, as the Word example shows, functional identity is only approximate.   This is true even if the different programs really are functionally equivalent: if the Mac Word, let's say, is used identically to the Windows Word, with the same interface, same functions, etc.   The two programs may nonetheless be different in terms of how fast or slow they run, how much memory they use, etc.   This might seem like a real-life complication which is not relevant to the underling theory, i.e., to the theoretical value of the concept of functional identity.   I will now argue that it is more significant than that.

Suppose we define functional identity between systems *A* and *B* as their ability to perform just the same algorithms.   Suppose, however, that *A* is faster and more memory-efficient than *B*.   So while *A* and *B* are functionally identical, there is a well-defined and measurable sense in which they are not exactly the same.   If things like speed and memory use are important, then functional identity, at least in this algorithmic sense, is an inadequate basis for comparing two systems.   We might, in this case, prefer to develop a more general notion of functional identity which accommodates these differences.   For example, we can formulate a stronger notion of identity than this functional identity—for argument's sake, call it "superidentity".   Two systems are functionally "superidentical" if they perform the same algorithms with equal efficiency.   Suppose we have a way to measure efficiency, in terms of time, memory use, or perhaps energy consumption.   Our functional theory of the two systems is now supplemented by a theory of "superidentity" which makes it possible to compare, and sometimes equate, two systems which are functionally identical.   It offers a more discriminate ground of comparison between systems than the original functional theory.   This new theory, however, has to be able to measure quantities which may not, necessarily, be functionally definable.   It improves upon a functional theory, but only by forming a new theory which does not necessarily have the philosophical features and

ontological simplicity which makes functional theories appealing in the first place.

To be more specific, functional theories achieve a certain elegance or sparsity by ignoring properties which are not relevant to the functional states recognized by the theory. A functional theory takes a system $A$ composed, let us say, of a set of entities $a_i$, and occupies itself solely with properties of each $a$ which are functionally defined. In particular, $a$'s properties are considered only insofar as they permit $a$ to be in one of a number of functional states and/or involve $a$'s relationship to other entities in $A$. An $a$'s relationship to other things, to its immediate environment, for example, is considered unimportant (at least unless it contributes to $a$'s functionally specifiable state). A functional description of $A$ is an idealization which ignores most of $a$'s interaction with its physical environment. It tries to picture $a$ not as an object in physical space-time, but in an idealized "space" all of whose points are $a_i$'s in $A$.

Unfortunately, information theorists like Seth Lloyd remind us that this idealization is often untenable. An $a$ in an $A$ must maintain an internal state and, at appropriate times, change states. Maintaining internal state requires energy to resist external forces, and changing state also typically requires energy. State changes are the result of interactions between different $A$ components, and physical interactions often result in energy being dissipated; this is why computers become hot, for example. A functional system requires energy to operate, and dissipates energy into its environment. Expelling this dissipated energy in ways which do not harm the system itself is part of the design for the system—for example, computers need to be built with fans and ventilation to prevent the CPU from overheating.

Since the use, production, and expelling of energy and heat are part of the *design* of a functional system, one could argue that they are part of the system's functional operation: part of the functional state of a system, perhaps, is the amount of heat generated at a particular moment. As I argued earlier,

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however, this means that two systems which are functionally identical at the level of the algorithms they perform may be nonidentical with respect to how they are designed to produce and dissipate energy, as well as how efficiently they use energy, or how safely they manage the energy they produce. A more general kind of functional analysis might be developed, which takes these things into consideration: two systems, let's say, are functionally "superidentical" if they manage their energy with equal efficiency. In order to test if *A* and *B* are superidentical, in this sense, we would have to measure the amount of energy they use or the heat they produce as they are operating—or, to be certain, to *calculate* the heat they will use based on information about their physical composition.

Superidentity in this case, however, is no longer a functional concept, because it can only be predicted based on physical information—information which is supposed to be factored out on functional analysis! To check *A* and *B* superidentity, we need to know physical (in addition to functionally specific) details about how the *a*'s and *b*'s manage heat and energy. It may be that *A* and *B* can be superidentical while being physically quite different, but it would require physical measurements or calculations to confirm this. Superidentity *is* functional in the sense that it concerns the functional design and operation of a system, but it is *not* functional in that it introduces criteria *into* the design which are not themselves functionally definable. Superidentity marks the transition-point between functional analysis and physics. Functional systems are embedded in environments, and although functional analysis can be used to describe their internal states, physical theories are needed to explain how they interact with their environment.

Applied to the problem of consciousness, this means that simply because two systems are functionally identical, we have reason to doubt that they are necessarily either both conscious or both non-conscious. Consciousness perhaps depends on the efficiency with which algorithms are performed, as well as the algorithms themselves. Even if I could create a computer which perfectly models the

algorithms performed by my nerve cells, I need not necessarily believe that the computer is itself conscious, assuming that the computer is physically quite different than the human mind. The computer may perform these algorithms much slower than the brain, or it might use energy in quite different ways, or interact with its environment in different ways. Perhaps consciousness results not only from the calculations our nerve cells perform, but also from the energy which is dissipated from nerve cells as they make these calculations. Perhaps consciousness results from a feedback mechanism or interference between this dissipated energy and the energy which comes *into* the nervous system in the form of sensation, or even just ambient energy which the nervous system uses to sustain itself. This is pure speculation, and I have no scientific theory at my fingertips which would try to formalize these ideas. I think they are just as plausible, however, as the notion that conscious results from algorithmic activity in nerve cells themselves. Perhaps, to explain consciousness, we need to explain how the nervous system acquires, uses, and dissipates energy, and how it relates to its immediate environment.

The brain is an extremely complicated system, but it is also extremely efficient in its ability to perform some calculations very quickly, and to store vast quantities of information. We can remember precise details of experiences extending back over large stretches of time. Since we do not (yet) have a means to quantify the amount of information actually contained in a sensation, for example, we do not have a means to compare the information-storage capacity of the brain, which can remember sensory details as well as facts, to that of a nonsentient computer. Since we do not have algorithms which can recognize faces or language as well as we can, or do other tasks typical of human intelligence, we do not have a way of measuring the algorithmic complexity of face-recognition, for example. So we cannot, at this point, actually compare the efficiency of the brain compared to a computer: how well a brain's hundred billion nerve cells perform calculations or store information, compared to computer's billions of transistors. It may be that the brain is actually significantly more efficient than a computer, and for this

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reason a brain is (or causes) consciousness while a computer does not.

What I mean by this is not that very complex algorithms are needed to produce consciousness, and that only brains, as of now, are efficient enough to perform them.   My point is rather that brains condense a tremendous amount of information and computing power in a relatively small space, and it may be that the physical details of how the brain can have this power, and how it manages the energies associated with this information and computation, is the essential question for how we can explain consciousness.   Consciousness does not result from complexity directly, but from the physical details of how its complexity is possible.

**Some philosophical issues in emergence.**

Emergence theory—whether of the "strong" or "weak" variety—has some direct applications to philosophy.   I will discuss two of them, one related to language and one related to emergent systems in different possible worlds.

To begin, some kind of emergence perspective is clearly needed to make sense of language. Reductionism, without any emergent theory to supplement it, undermines the differences between high-level phenomena.   For example, all familiar objects in our world share the same basic ingredients: mostly electrons and quarks.   At the low-level scales of quantum mechanics, high-level differences—to take one example at random, the difference between a jaguar and a tiger—are insignificant.   Since language is based on these high-level differentiations, we clearly cannot understand the meaning of linguistic terms looking only at low-level reality.

A potential corollary to this is that if low-level reality is ontologically exhaustive of the physical

realm—if it is "all there is"—then language is itself meaningless. Linguistic meaning, in this case, would demonstrate that low-level reality is not ontologically exhaustive; that there is an *ontological* sense in which the high-level is "more than" the low-level. If jaguars and tigers are "nothing but" collections of electrons and quarks, then references to jaguars and to tigers are, fundamentally, references to the same kinds of things. Since there *is* a difference in meaning between the two words, we could conclude that jaguars are not "nothing but" but rather "something more" than electrons and quarks.

Going to the other extreme, if we have a Platonistic view of natural kinds—where there exists a "space" somewhere where the kinds themselves or their prototypes are "recorded"—then this would serve to fix the difference in meaning between words. "Jaguar" would refer to the jaguar-prototype in this space, "tiger" to the tiger-prototype, etc. The suggestion of such a space, of course, is metaphysically extravagant, but there are some scenarios where a space like this can indeed be said to exist. A small-scale example would be virtual worlds created by a computer program—for example, worlds which are populated by imaginary beings. For the program to simulate the behavior and appearance of these beings, there would have to be algorithms or prototypes somewhere in its memory, separate such models for each kind of being. Or, in "brain in a vat" scenarios, I imagine the whole natural world along these lines.

We need not resort to this kind of Platonism, however, to make sense of differences in linguistic meaning. Our minds are emergent systems, attuned to other emergent systems and patterns in our environment. The difference between a jaguar and a tiger, for example, is a difference in how their constituent quarks and electrons are organized. They may be composed of the same low-level things, but they differ in the structure of their composition. The difference in meaning between the two words reflects this difference in organization.

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This argument appeals to emergence theory, but it requires only a "weak" emergence theory, and actually argues against a potential benefit of "strong" emergence. The argument accounts for linguistic difference between terms like "jaguar" and "tiger" without requiring that a jaguar is something *ontologically more than* a collection of particles; or in general, that the high-level phenomenon is ontologically more than its low-level foundation. A jaguar, in effect, is a collection of particles "plus" a kind of organization; but as the particles acquire this organization they acquire no further ontological "content", and an organization scheme is not something *ontologically* present. "Schemes" do not exist in space time. What, in the jaguar, has spatiotemporal *location* are its component particles; and we have no need to locate *ontologically* in the jaguar something above and beyond this located material.

The above discussion concerned systems with similar low-level constituents but different organization, where the latter differences is observable and motivates a conceptual and semantic difference between terms referring to these systems. A different set of problems adhere to systems with *similar* high-level properties but, potentially, different low-level details.

An emergent/complexity theory paradigmatically involves a complex system, *S*, of simpler entities of type *T*. If successful, the theory explains the properties and behavior of *S* in terms of organizational patterns found, or possible, among *T* sets. Consider, now, the possibility that two different systems *S1* and *S2* have similar (or identical) high-level characteristics (I will use the term "characteristics" to subsume properties, behavior, and dispositions), but different emergent theories. To be more specific, assume that *S1* is emerges from *T1* sets, and suppose the symbol **O**1 represents the organizational pattern(s) found among *T1* to yield *S1*. Suppose analogous symbolism for *S2*; and, in addition, that *T2* is a different type than *T1*, and **O**2 is likewise different from **O**1. To be concrete, we can imagine Putnam's example of "water" and "twater", where twater's composition is represented by the expression XYZ, analogous to water's $H_2O$. Assume that water and twater have identical high-level

properties; no different between them appears or is known until one goes about exploring their molecular composition.

The first question is how, or whether, water and twater are to be identified.   On a simplistic reductive paradigm, water and twater are simply different things; there is no sense to the question of whether they should be regarded as the same.   There is no more reason to identify them than there is identify either to a substance—say, ABC—with completely different high-level properties.   High-level properties are not relevant to how emergent systems are individuated.   The high-level resemblance between *S1* and *S2* has no bearing on their identity as kinds.   If there is a single ordinary-language name which encompasses both *S1* and *S2*, then this is purely a matter of convenience, and reflects the imprecision of language.   For technical purposes, *S1* and *S2* will need different names.   This is because any name for *S1* does not actually refer to *S1* itself, but to *T1*: there should be no identity of referring terms without identity of the underlying types.   "Water", on this paradigm, simply *means* $H_2O$.

Against these assumption, an emergent paradigm would argue that in some sense high-level resemblance *should* suggest identity.   It may still be scientifically useful to distinguish cases where the high-level phenomenon is "realized" as *S1* and as *S2*, but emergent characteristic are the basis for how we individuate phenomena and ordered situations.   In particular, words which refer to high-level phenomena or substances refer to then as high-level, not to their low-level, underlying types.   "Water" refers to stuff with certain high-level characteristics, not (except indirectly) to $H_2O$.

Suppose we use the symbol **W** to refer to all the high-level characteristics of water. Following David Chalmers, we could say that "water" refers in *primary intension* to stuff which has characteristic **W**, to **W**-like-stuff; and in *secondary intension* to $H_2O$.   We could also so that "water" refers *de re* to $H_2O$, and *de dicto* to **W**-like-stuff.   Reference *de dicto* is now seen to be broader than reference *de re*: the

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range of things which can be correctly referred to as "water", when this reference is read *de re*, may include things other than $H_2O$. In Putnam's example, it is correct, so long as the reference is interpreted via primary intension, to refer to "twater" as "water", because reference in this case does not make any presumption about the low-level characteristics of the stuff referred to. Most things in nature acquire their names along these lines: linguistic communities agree to refer to things with a single word if they have the same properties, and only afterword do scientists give a low-level explanation of those things. The criterion for different things being references by the same word is that they have relevant properties in common, not their being composed out of the same low-level stuff. Everyday language, with respect to its terms for kinds like "water", is holistic rather than reductionistic.

These comments can be extended to the case of qualia. Since we do not really have a reductive theory of qualia, the criteria for descriptive terms pertaining to qualia is a presumed resemblance of qualitative characteristics among different qualia described by the same terms. The set of all sensations described as "red", for example, are presumably experientially similar (at least, this is a presumption we must make if we are prepared to grant the term "red" when applied to qualia (as opposed to normal physical objects) any meaning whatsoever). This criterion does not imply *low-level* resemblance, however, between different red qualia. Two different red qualia may be extremely different on the physical level yet experientially indistinguishable; it would be correct, in this case, to refer to them both as "red".

Similar considerations lead Saul Kripke to argue that qualia (or, in his terms, mental states) cannot be identical to physical states, because any given quale (suppose one I now experience) could potentially have been realized by a different physical state than the one I am now in. For high-level identical systems *S1* and *S2*, we can say that *S1 could have been*, in fact, *S2*, that is, that *S1* could have been *T2* objects in configuration **O**2, rather than *T1* objects in configuration **O**1. There is a possible

world where *S1* is actually *S2*.   In general, two possible worlds can resemble one another in terms of their high-level characteristics while simultaneously differing in their low-level details.   A natural corollary of emergence theory seems to be that one can form families of possible worlds which are alike in the nature of their high-level reality; or, high-level resemblance forms an equivalence relation among possible worlds from which we can construct equivalence classes among possible worlds.   Two worlds are part of one equivalence class if they are indistinguishable with respect to their high-level details[161].   Since qualitative experience is a high-level detail, two worlds could be equivalent in this sense even if qualia have different physical explanations in each one.   My counterpart in a different world could have exactly the same conscious life as I do, although our brains might be physically quite different.   Since we have the same conscious experiences, our qualia, nonetheless, are "the same" in some meaningful sense.

So it seems as if the identity of qualia do not depend on their physical foundation, which suggests

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[161]   This has one complication, in that scientists deliberately try to create experiments which will reveal the low-level details of our actual world, and these experiments in effect "force" high-level reality to register low-level details.    To test between two competing low-level theories, for example, scientists find a way to translate their low-level details onto a high-level scale, so that one theory or the other can be rejected.    Scientists can test, say, whether water is $H_2O$ or XYZ.    Perhaps the results of this test are a printout on a computer screen: $H_2O$ or XYZ. Suppose two worlds, *W1* and *W2*, are identical in high-level characteristics, but differ on what composes water. When scientists in one world conduct a test like that mentioned, the screen shows $H_2O$; in the other world, it shows XYZ.    This is obviously a high-level difference, so the high-level symmetry between the worlds is broken. We need to define the equivalence between worlds based on high-level resemblance in ways which forbid this meddlesome activity of scientists!    Perhaps we can say that two worlds are high-level equivalent if no high-level difference exists between them *unless* scientists come around and deliberately create this difference so as to examine their worlds' low-level details.

that qualia are not identical to their low-level causes or foundations.   Kripke argues, for example, that we have good scientific reasons for *rejecting* identity between different physical phenomena which have the same high-level characteristics.   He states this case with respect to heat: we have good reason to assert that heat simply *is* the molecular kinetic energy.   For physical terms like "heat", it is useful for them to refer to low-level phenomena, i.e., to refer to phenomena described at the lowest possible level, when a low-level explanation is at hand.   To paraphrase his argument somewhat, if there were a different phenomenon which seemed like heat—cased sensations, for example, experientially like the feel of "hot"—but if this phenomenon was *not* kinetic molecular energy, then we would do well to invent some term for it other than heat.   For scientific language, when a term refers to a natural phenomenon, we should interpret this reference on the scale of the lowest-level available description of the phenomenon, and restrict its reference to phenomena which are covered by this low-level description.   In the case of qualia, on the contrary, we have good reason to identify qualia even when they differ in low-level detail. This is because low-level details are not ontologically "part" of qualia they way that they are ontologically fundamental to phenomena like heat.   To say what heat *is*, to give it ontological specification, we need to give its low-level explanation.   Qualia, on the other hand, are *experiential* objects, whose existence is tied to experiential reality; they exist in an experiential space.   We may wish to know what low-level structures cause qualia, but these structures do not ontologically *define* qualia.

In effect, even if we *had* a physical explanation for qualia, we still would have no reason to *equate* qualia to physical objects or physical states, because it is logically possible for these same qualia to have (or to have had) different explanations.   Qualia are a high-level feature of our world, and there are many possible worlds which could share these high-level details and yet differ at lower levels.

The "scaffolding" of this particular argument, then, concerns the meeting-point between emergence theory and possible worlds.   The fundamental principle is that different possible worlds can

share the same high-level characteristics.   This equivalence resembles, to some degree, the equivalence between two different computational systems which are functionally identical, or identical with respect to the algorithms they can perform.   This latter identity may disappear once one considers the rate at which the systems in consideration use energy, and other physical details which may by quite important.

For an analogous case with respect to qualia and possible worlds, consider a typical imaginary scenario used to illustrate the point that qualia can have different physical explanations.   For example, consider a "brain in a vat" scenario, where our brains (myself and others) are fed stimuli by a computer. This would obviously have to be an extremely powerful computer.   All of our sensations, investigations, scientific experiments, etc., would have to be precisely calibrated.   I am not sure that such a computer is even *physically* possible.   There are physical limits on computational power that may come into play here.   To see this better, imagine that the vat is extremely large—many times the size of the earth—with many brains.   Signals between my brain and the computer, even travelling at the speed of light, would not be instantaneous; there might be observable time lags which would register as perceptual anomalies. I can imagine looking at an apple, say, and initially seeing no color; only after a second or so would the apple suddenly take on a shade of red.   Or I say "here, have an apple" and hand you one, and you, puzzled, ask me "what apple?"—before, a second later, seeing and taking the apple.   Or, imagine a vat the size of the universe, and a computer outside the spatiotemporal universe entirely.   Here, the signals between the computer and myself would seem to violate physical law complete.   This final example can be generalized to one where we are *not* brains in a vat, but *do* get sentient experience only from a computer outside space-time analyzing our surroundings and feeding us sense-data consistent with them.

All of these are possible worlds, at least in the sense that the break no logical laws; they are not *im*possible.   However, some of them break certain physical laws, particularly ones related to information transfer, to the speed at which this occurs, the localization of information, and the energy required to

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transfer information.   Of course, there are possible worlds in which these information-related laws are themselves broken: it is logically possible that information is *not* physically constrained, that information can permeate the universe without spatio-temporal boundary, or interacting with energy in any way. Still, I doubt that any explanation of consciousness is possible which does not take the physical nature of information seriously.   I suspect that the reason *why* certain intelligent systems are also conscious is that they acquire and analyze information in ways what cause conscious sensations to arise in space-time, somehow brought into being by the energy which carries this information in the first place.

If this is on the right track, then possible worlds which violate the physics of information are not really relevant to the problem of explaining consciousness.   Of course, such worlds tend to be introduced merely for the purposes of conceptual analysis: to argue that their logical *possibility* alone demonstrates that qualia are not identical to physical states.   Such logical possibility is unrelated to whether or  not those worlds are actually useful for explaining qualia; obviously, no-one is proposing a brain-in-a-vat scenario as a possible *explanation* for qualia.   However, I think it is worth noting that even though qualia could as a matter of logical possibility be realized in many different ways—so that there are many possible worlds, each with different physical states corresponding to given qualia—only a few of these possible realizations may be compatible with the physics of information.   Consequently, only a small handful of physical systems may be capable of realizing qualia once we factor information-theoretic concerns into the picture.   The question of whether a system can realize qualia or not then becomes a physical one, not a functional one.   Brains are able to realize qualia because they are physically structured to do so—not because of any functional states they take on.   When there is a quale, then, the brain state which realizes it may be one of only a very few physical systems and organizations which could realize that given quale.   This makes the relationship between the quale and its physical state realizor certainly closer than we would take it to be under a functional model, even if it is not quite an

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*identity*.   Moreover, even if there do exist other physical states which could *potentially* realize that quale, there is in fact one state which *does* realize it.

At this point I would like to invoke Jubien's property-theoretic model of reference discussed in Chapter 4, and, in particular, recall the discussion about the *Pieta* and the clay which "realizes" it.   The property *being the Pieta* could have been realized by other blocks of clay: i.e., other blocks of clay could have instantiated the property *being the Pieta*.   In fact, one block of clay did instantiate this property, so when I refer to *Pieta* I refer to this block of clay.   Expressions involving this Pieta which do not seem to involve this block of clay at all can be understood, using the idea of property networks, as making assertions about the property *being the Pieta*—not about the Pieta itself (i.e., the block of clay).   For example, the assertion that "*Pieta* could have been made out of some other block of clay" obviously does not refer to its actual block of clay, which could not have been a different block of clay than itself.   This assertion, however, can be read Jubien-style as involving the property *being the Pieta*: this *property*, it is asserted, could have been instantiated by some other block of clay.   Similarly, when I say that some other physical state (for convenience, assume that this would be a *brain* state) could have realized a particular quale, what I am really saying (following this property-theoretic semantics) is that the property *being this quale* could have been instantiated by some other brain state.   In this case, the "this" in *this quale* represents the quale insofar as it is individuated in my experience.   Given any quale, then, this argument must assume that there exists a well-defined property *being this quale* which is instantiated by some brain state.   I believe that this is a valid assumption, however, because it is consistent with the affective and spatiotemporal structures of qualitative consciousness, with how qualia are individuated as the minimal units of conscious experience.   So, for any quale, there is a property *being this quale* whose can be the basis for modal claims that may not work for the quale itself: the property *being this quale* could have been instantiated by some other brain state, but the brain state which realizes it obviously could not have

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been some other brain state.   Some occasions where a specific quale is referred to would be read, on this property-theoretic analysis, in terms of the property *being this quale* rather than in terms of its brain-state substratum.   In general, however, the expression "this quale" will refer to the brain state, just as the expression "*Pieta*" refers to a block of clay.

Jubien's semantics gives us a way to interpret referring terms which refer to phenomena that have both high-level and low-level reality or descriptions: reference itself is to the phenomenon on the low-level description; this description tells us ontologically what the phenomenon *is*.   However, the high-level description gives sense to property associated with the phenomenon in question.   For example, although water is $H_2O$, and "water" refers to $H_2O$, the property *being water* could have been instantiated by some other substance (e.g., XYZ).   This implicitly assumes that in linguistically expressing the property *being water* we read "water" in terms of primary intensions, but that has no bearing on the property in question; it is simply a matter of how it is referred to.   I have a property in mind, and I express this property with the phrase *being water*, where, as part of my act of expression, I stipulate that "water" is to be read in primary intension; as "watery stuff" or **W**-like-stuff rather than as $H_2O$.   This property is coinstantiated with *being clear* and *being tasteless* and *being necessary for life*, etc.   I could perhaps have expressed the property instead as *being watery* or *being watery stuff*.   The property in question may or may not be well-formed, but if it *is* well-formed, how I express it linguistically is a mere convenience; the fact that "water" can be read as "$H_2O$" and not as "watery stuff" does not render the property expressed by *being water* somehow ambiguous.   So, $H_2O$ instantiates the property *being water*, but that some other substance (XYZ, say), could have instantiated it instead.   Nonetheless, when I refer to water, I refer to $H_2O$, despite the fact that these other instantiators are possible.   Context must dictate whether a reference to water is an *actual* reference, a reference to $H_2O$, or a mere simulation of a reference, one which is not about water *per se* but about the property *being water*.   When I point to a lake

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and refer to the substance there as water, I am necessarily making an *actual* reference to water, referring to it as $H_2O$, or in its low-level description, because what I am referring to is water as a physical entity *localized* in spacetime, not as something bearing certain properties and specified relative to those properties.

As a rule of thumb, a reference is always to a substrate—not a disguised expression about a property—when the reference picks out the substrate as localized in spacetime. Even if a high-level phenomenon has multiple possible low-level realization, when I single it out as a spatialized and temporalized object I am referring to it as *whatever actually occupied that spacetime*, and so as whatever low-level entity or entities *are really there*, irrespective of which *could* be there. No reference to things located in spacetime can truly be read as referring to high-level phenomena. When high-level properties appear in the referring expression itself, they serve as linguistic conveniences that help to fix the reference, not as indicating that the referent itself is to be understood under a high-level description.

As an application of this rule of thumb, references to qualia which involve qualia as spatiotemporally located should always be understood as referring to the low-level entities which realize qualia, irrespective of the fact that qualia have multiple *possible* realizations. References to qualia in this case refer to whatever is *there* in space and time. And, I would submit, most references to qualia *do* involve spatiotemporal localization, because qualia are *always* spatiotemporally located in experience. This is not necessarily true of qualitative *characteristics*, like being red, but a particular quale is a *presence* in my consciousness. I may imagine that a certain quale, "this quale", *could have been* realized by some different brain state, but when I refer to "this quale" I am referring to something which is spatiotemporally localized and therefore to something occupying spacetime. The fact that this something could experientially resemble some other quale existing in a different possible world has no real bearing on its physical identity. Of course, this argument goes through only if we are prepared to believe that

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references to qualia in the sense of "this quale", which I hold in my mind as I introspectively examine my consciousness, are in fact references to things in spacetime. They certainly refer to something individuates in *experienced* space and time, so the argument is sound so long as a connection exists between experienced spacetime and actual, objective spacetime. This is not true *a priori*: but the structural parallels between experienced spacetime and objective spacetime as we believe it to exist—and, after all, our theories of objective spacetime derive from our experience of inner, conscious spacetime—make such a correspondence seem likely; it would be hard to imagine where the spatiotemporal structure of conscious experiences comes from if not from real, world-bound space and time.

I submit, then, that qualia, for most purposes, are indeed identical to physical states or even physical objects; they are *there* in space and time, as physical things are. The evidence for this comes not by desubjectivizing qualia, ignoring their subjective dimension, but instead by emphasizing their subjective reality, and realizing that the key aspect of this reality which *makes* it subjective is the fact that it exists in inner space and time: this is the evidence that qualia spatiotemporal form. The observation that qualia do have this spatiotemporal form is the first step in the argument that they are, more likely than not, physical things.

**Final Thoughts.**

The terms I have used to defend a physicalist, reductionist view of consciousness—where consciousness has physical explanation, and where qualia, the minimal units of consciousness, are physical things—are terms like "localization", "information transfer", "information-bearing energy", and the like. These terms are meaningful in the domain of information theory, but they also resonate with

consciousness as subjective reality: consciousness as the inner life of human subjects.   This subjective aspect is an asset, not a hindrance, to physical explanation.

Opponents of physicalism are also often opponents of philosophical or cognitive individualism. Robert Wilson is a canonical example here: by viewing the scale of "mind" outside the bounds of the individual, he also lends credence to theories of mind which depart from physicalism; he himself develops a sophisticated kind of functional theory.   Emergent theories in the strong sense, which emphasize high-level (and so publicly accessible) reality as ontologically prior to low-level realities introduced to explain them, also resonate with less individualistic, more "public" approaches to the mind and to rational activity in general.   As rational agents, using our natural intellectual powers, we are social beings relying on an intersubjective community to confirm and refine our observations.   To conceptualize low-level reality, however, we need to make imaginative leaps departing from high-level observation, and so we each in have our own "picture" of low-level reality; we can form collective opinions on this reality only to the degree that we see the space of public reason as a presumed correspondence between individuals' private cognitive realities, and so experiential realities in general.   This also reveals the link between this scientific concept of public reason and the political concept of the public sphere, where we recognize our fellows as possessing fundamental human rights and dignity precisely because while existing in this social arena they also have an inner life which needs to be preserved, and to be free of suffering and indignity.   The basis of reductive science in the powers of the individual mind, how the scientific community is conceptualized on this reductive paradigms, bears some philosophical parallels with how liberal democracy conceptualizes the social community as a whole: and liberal democracy itself, as I suggested in the Introduction, is a kind of reductive legal theory, based on a fundamental set of human rights.   Moreover, these rights themselves tend to be based on human subjective experience, and so one qualia—demonstrating how qualia act as a reductive base for social sciences such as political theory.

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Emergence theory as a philosophical world-view, functionalism as an approach to the mind, and a shift in focus in the theory of cognition from the individual to collective: these anti-reductive paradigms tend to reinforce one another.   Collectively, they form an exciting research program.   I am reluctant, however, to displace the individual human subject from the honored core of our political and legal systems, and by extension our social and human sciences—especially in these times, when one of the world's most self-consciously democratic nations seems so willing to tolerate abuses of fundamental human rights.   It is interesting to talk in the abstract about some entity larger than the individual emerging as the new focus of research in the philosophy of mind, in cognitive science, or in sociology; but we must be cautious lest this academic exploration evolve into, or become an apology for, the attitude that the experience of single individuals is unimportant on the grand historical scale.   When an individual suffers, is tortured, is unjustly persecuted, they become more than an individual; they become a barometer of the conscience of humankind as a whole.   When many of us look at the "war on terror" now, for example, we see not a historical narrative but a few individuals: the name of Maher Arrar bears stronger on our conscience than any story governments can weave to try to justify the policy that sent him to torture.

I certainly am not trying to blame the anti-reductive paradigm—which after all, I admit, offers tantalizing avenues for new research—for things like the imprisonment of Maher Arrar.   My point is only that the scientific and philosophical communities are adept at situating the liberal discourse on human rights in the overall terrain of reductive science, of the scientific worldview.   We have a clear story of how the ethical priorities of liberal democracy can be justified within the world of modern science, of how they are furthered, not hindered, by scientific reductionism with its secular overtones.   If we reject reductionism in favor of something more holistic, we will have to rewrite this story of how our ethical norms and our scientific paradigms resonate with and reinforce each other.

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