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Freed, Peter J

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The Problem of the Impersonal Physician

by

Peter Jacob Freed

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Committee in charge:

Professor Thomas Boyce, Chair

Professor Elisabeth Lloyd

Guy Micco, MD

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The thesis of Peter Jacob Freed is approved:

Walter D. Brown 5/21/98
Chair Date

Edward H. Lloyd May 18, 1998
Date

G. M. ... 5/21/98
Date

University of California at Berkeley

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The Problem of the Impersonal Physician

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by

Peter Jacob Freed

This thesis is dedicated to Raphael House and its children,
who I love more than I could ever say.

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Chapter 1: The “Problem” of the Impersonal Physician

She had never talked about what the symptoms meant to her. She had never said: “This means that I can’t go to the bathroom by myself, put my clothes on, even get out of bed without calling for help.”

When we finished [the physical assessment] I said something like: “Rheumatoid arthritis really has not been nice to you.” She burst into tears, and her daughter did also, and I sat there, very close to losing it myself.

She said “You know, no one has ever talked about it as a personal thing before, no one’s ever talked to me as if this were a thing that mattered, a personal event.”

That was the significant thing about the encounter. I didn’t really have much else to offer.... Something really significant had happened between us, something that she valued and would carry away with her.

– an anonymous physician [Bates (1995) 1]

Many American patients complain that physicians do not routinely or readily discuss the personal, subjective component of illness. The etiology of this problem is multifactorial; this paper seeks to address one factor only: I will suggest that doctors employ several intellectual techniques that may make it difficult for them to explore the world of meaning. Patients, alternately, are not constrained by these intellectual techniques, and as a result are relatively free to explore this world. The discrepancy between the doctor’s constraints and the patient’s freedom sometimes produces a chasm that patients, endowed as they are with the wider perspective, can see more clearly than their caregiver. The patient perceives that their illness has meaning – that it is “a thing that matters” – and perceives also that their doctor does not share their insight, or at least does not appear to. This results in a sense of isolation. Unable to share fully their illness with the very person to whom they have entrusted the honor of understanding it, they may become frustrated, and charge their doctor with impersonality.

My sense is that some critics believe that this problem might be easily solved; the doctor’s failure to perceive the world of meaning is an oversight, and might be corrected with improvements in medical training. I will suggest otherwise. Physicians’ intellectual shackles, to use the critic’s term, are by no means irrational or unnecessary; on the contrary, they allow the explanation of disease to progress rapidly and logically. That is, the very qualities that render these techniques inadequate to explore meaning endow them with fantastic diagnostic and prescriptive powers. I want, therefore, to portray physician impersonality in a sympathetic light, as a byproduct of medicine’s socially sanctioned assumptions about the proper way to think about disease.

This is not to say, however, that I am satisfied with the current state of affairs, or that I believe that medicine's intellectual techniques need no revision. It is only to say that I believe that physician impersonality is not an irrational problem. It is a rational problem. But along these lines, I believe it is subject to rational solution. If we can show that the intellectual techniques employed by physicians entail faulty assumptions, and that by modifying those assumptions we would improve doctors' ability to explore meaning without diminishing their capacity to diagnose disease, physicians might be willing to modify their behavior. It is my sense that such an effort is already underway in the world of science; whether the attendant behavioral changes will come to pass remains to be seen. In this paper I will mention some of the thoughtful critiques of medicine's intellectual assumptions that have been raised in recent years. I will close with the suggestion that, in the end, it may be economic rather than intellectual forces that initiate reform.

The paper is divided into six chapters. In this one I will try to describe the problem of the impersonal physician more clearly, and will then give a synopsis of my argument.

* * *

In a famous 1977 article on the defects of the biomedical model of human illness, George Engel argued that "medicine is in crisis" brought on by its failure to consider the psychosocial aspects of disease – aspects that reveal illnesses to have meaning for those who suffer them. The cause of this failure, he observed, is the assumption that disease is purely biological, which "has now acquired the status of *dogma*." This dogma creates a peer culture among doctors that makes efforts to explore the existential aspects of illness relatively unpopular. As a result, large numbers of Americans

complain that physicians are lacking in interest and understanding, are preoccupied with procedures, and are insensitive to the personal problems of patients and their families. Medical institutions are seen as cold and impersonal; the more prestigious they are as centers for biomedical research, the more common such complaints. [Engel (1977) 134]

Contemporary critics do not find the problem much improved. Patients who wish to explore the meaning of illness must fight against the main currents of medical thought in order to do so. Arthur Kleinman, the physician and anthropologist, puts it like this:

Biomedical settings... are not places where meanings can easily be found, worked over, resolved, expressed, negotiated with others, and put into the enchanting form of life stories.... In the authorized biomedical version, sickness has no meaning, purpose, or use. There is no point to it.... To engage meaning in the context of biomedical care,

the patient, the family members, and the practitioners must work against the constraints of ideology, training, and institutional barriers to find some separate space of enchantments to engage the meaning of suffering or dying. That space, in the era of managed care, has been difficult to find. " [Kleinman (1996) 6-7]

To flesh out what Kleinman is talking about, a passage from *Kitchen Table Wisdom* by Rachel Remen, the physician and author, shows what it is like to *be* an impersonal physician.

The second day of my internship in pediatrics I went with my senior resident to tell some young parents that the automobile accident from which they had escaped without a scratch had killed their only child. Very new to this doctor thing, when they cried, I had cried with them. After it was over, the senior resident took me aside and told me that I had behaved very unprofessionally. "These people were counting on our strength," he said. I had let them down. I took his criticism very much to heart. By the time I myself was senior resident, I hadn't cried in years.

During that year a two-year-old baby, left unattended for only a moment, drowned in a bathtub. We fought to bring him back but after an hour we had to concede defeat. Taking the intern with me, I went to tell these parents that we had not been able to save their child. Overwhelmed, they began to sob. After a time, the father looked at me standing there, strong and silent in my white coat, the shaken intern by my side. "I'm sorry, Doctor," he said. "I'll get ahold of myself in a minute." I remember this man, his face wet with a father's tears, and I think of his apology with shame. Convinced by then that my grief was a useless, self-indulgent waste of time, I had made myself into the sort of a person to whom one could apologize for being in pain. [Remen (1996) 53]

Having now heard from a patient, a doctor, and several critics, we are in a position to offer a working definition of physician impersonality:

An impersonal physician is one who fails to notice, or fails to communicate to patients that they notice, that disease is meaningful. As a result, patients experience such physicians as ignoring an essential aspect of their illness. They may feel that such doctors do not believe that illness "is a thing that matters, a personal event," and may even come to doubt the legitimacy of their own conviction that it is.

Notice that our definition is confined to "the impersonal physician," and does not concern "the rushed physician" or "the physician who doesn't explain her treatment plan very well" or "the physician with the annoying personality," each of which represents a different problem in medicine. Notice also that the term "meaningful" is here crucial to our definition. I will reserve discussion of meaning until the last chapter; for now, I encourage readers to use their own understanding of the term.

Explaining the Problem

I have come across several explanations of the problem of the impersonal physician, each with its own implicit solution. The most compelling, to my mind, is that physicians face inordinate time pressures that

make it difficult for them to have relaxed, ruminative conversations about the meaning of illness. Thus even doctors who want to talk about meaning find it difficult to do so. For example, in a 1997 letter to the *Journal of the American Medical Association (JAMA)* 2,300 Massachusetts doctors wrote:

The time we are allowed to spend with the sick shrinks under the pressure to increase throughput, as though we were dealing with industrial commodities rather than afflicted human beings. [Glasser (1998) 35]

The implicit solution to this problem is obvious, but currently improbable.

A second explanation holds that the problem lies in training.

We are trained to behave calmly in emergencies, to suppress any panic that we may be feeling, and also to suppress any antagonism that we may occasionally feel towards any individual patient. These principles are plainly unarguable and fit in with the accepted idea of proper professional conduct. Adopting the model of the calm and composed efficient doctor, however, does make it difficult to learn how to express sympathy and other emotions that might be helpful to the patient at the right moment. I do not wish to imply that doctors are unsympathetic - but merely that having learnt how not to show panic or anger it is necessary to relearn, as a conscious effort, a way of showing human sympathy. [Buckman (1984) 1598]

The solution, according to this position, lies in improved training. "I do not suggest that there should be any major change in medical attitudes or teaching, but simply that talking to seriously ill patients is a subject in need of greater emphasis in the curriculum. It is a skill (not a divine gift) and it can be taught like any other aspect of medical care." [Buckman (1984) 1599]

Other explanations suggest that scientific disciplines, including medicine, attract personalities who gravitate towards the logical, rather than the emotional, end of the spectrum of intellectual styles. Compounding this tendency, medical schools, with their inordinate valuation of high MCAT scores and good marks in the "hard" sciences, select for such styles. As a result, the problem of the impersonal physician is one of pre-established temperament; the prescription is to reform our schools' selection criteria.

Still other observers note that just as differences in temperament, age, ethnicity, religion and social class cause communication breakdowns in all segments of society, so too physicians frequently fail to connect with their patients for such reasons.

Each of these explanations, and many others the reader may suggest, is compelling. None will be the focus of this paper, although I will touch on the issue of time in the final chapter. Rather, as mentioned

above, I will try to show that the intellectual techniques associated with the role of physician inadvertently lead doctors to avoid modes of thought upon which patients rely in their efforts to make illness meaningful.

So what, specifically, are the intellectual techniques to which I am alluding? There are three, and each represents one half of a dichotomy. The dichotomies are as follows:

1. What question(s) do we (doctor and patient) ask of disease?
Dichotomy: "How did this occur?" (what's the mechanism?) and "why me?" (what is the meaning/purpose?)
2. What perspective(s) do we use to answer the first question(s)?
Dichotomy: Subjectivity and Objectivity
3. Taking the patient as a starting point, what direction(s) do we move in when analyzing disease?
Dichotomy: Micro-reductionism (dive under the skin in the search for dysfunctional body-parts) and Holism (place the patient in a larger social/moral/spiritual context).

For each dichotomy I will suggest that while doctors tend to value the former term, patients are interested in both. The resultant discrepancy in interest and attention can lead patients to feel their doctor is somehow "impersonal."

In Chapter Two I will discuss the dichotomy of "How?" versus "Why?" I will define *how* as a question about the mechanism by which disease occurs. Mechanistic explanations are given with what Aristotle called efficient causes, which is to say, material causes lodged in the past. I believe it is the primary task of the physician to ask, and then answer, the question *how*. Our hope is that once the mechanism of disease is revealed, the physician will be able to alter it, thereby causing a felicitous change in symptomatology.

The question *why* is more complex. It is concerned with the meaning of illness, as in the question "Oh God, why me?" Patients frequently ask the question *why* even when the mechanism of their illness has been elucidated. Such questions are answered with what Arthur Kleinman has called an "illness narrative." I will suggest a technical explanation of narrative construction that, I hope, may reveal simultaneously why patients use it and why physicians are wary of it. I will suggest the following:

- 1) Narratives seek to locate illness in an "ultimate context" which frequently includes the future as well as the past, and the metaphysical world as well as the physical.
- 2) The importance one ascribes to a specific life event, and the interpretation one gives it, is determined by the ultimate context one chooses to place it in. Thus, taking 1) above, we see that a change in the ultimate context of one's life will cause one to reinterpret past events so that these past events anticipate their ultimate context. This is a form of back-causality.

- 3) Because ultimate contexts frequently involve the future and metaphysics, they are not subject to empirical verification, and therefore are definitional in nature. That is, the narrator is given license to *define* the illness narrative as including events A,B,C and D, regardless of whether A,B,C and D have any logical or mechanistic connection to one another.

If 1, 2 and 3 above are correct, they help explain why physicians are wary of the question *why*. For they show narrative construction to depend upon teleological thought, or what Aristotle called “final causality,” in which the future causally affects the past. Importantly, teleological thought is non-empirical, and therefore unverifiable and unfalsifiable. Modern western science is antagonistic towards such thought, at least when it claims to offer true statements about the structure of the universe,¹ because of our implicit belief that the future does not cause the present – only the past causes the present.

I want to suggest that having learned to avoid teleology, doctors are ill-prepared to help patients construct illness narratives that depend upon it. To flesh this out, imagine that a man with cancer finds that his illness has introduced him to a love for God, which was missing in his life prior to the disease. The spiritual discovery leads him to see cancer as a gift from God. Notice that the man here implicitly posits a teleological explanation of his disease,² because the meaning of cancer is altered by events that occurred after its contraction. I want to suggest that this sort of back-causality, accompanied as it is by non-empirical assertions, is as verboten in the world of science as it is common in narrative. In a medical explanation of cancer, the mechanistic course of the illness is described identically regardless of whether the patient finds God or nihilistic despair as a result. For science, the only thing that changes about the man’s cancer is that as time passes it recedes farther and farther into the past; as an event *qua* event it does not change. But for the narrator who finds God, not only does the cancer recede farther into the past, but it changes in and of itself as well. I believe that this distinction is an important one.

¹ This antagonism is seen not only in historical writings, but in the efforts of logical positivism and other contemporary efforts to demonstrate that for those who wish to gather information about the world, synthetic thought (empiricism, inductive reasoning) is vastly superior to analytic thought (rationalism, deductive reasoning).

² Indeed, he has no option but to posit a teleological explanation, unless he is willing to state “I got cancer so that God might be created.” Notice that this construction is *precisely* what atheists suggest in their analyses of people undergoing religious conversion – that God is a human construction, used instrumentally to combat suffering. Clearly this is different from how believers experience themselves; what the cynic calls “false consciousness” the believer calls, simply, “consciousness.”

Furthermore, I will go on to suggest that science does not merely put teleology aside, much as I might refuse dessert without thereby demanding that my dining companions do so as well. Science is currently actively attacking the legitimacy of *why* questions, much as I might insist that in refusing dessert I cast doubt on the very existence of my friends' chocolate cake. Writings from the field of evolutionary biology makes this especially clear: human beings are there portrayed as elaborate, self-sustaining conglomerations of feedback loops produced by combinations of chance and necessity. This vision of humanity, common in science and medicine, is inadvertently used to attack the notion that human life exists in any sort of meaningful ultimate context; after all, both chance and necessity render purpose (which depends upon ultimate context) irrelevant. Even if there were no purpose, the event would have occurred precisely as it did (necessity) or would have occurred in some other random (that is to say, purposeless) way. In neither case is the event "headed" anywhere. This attack upon ultimate context is no small matter in the world of science; it is its very bread and butter, and is considered by many to be instrumental to science's capacity to progress. But its very strength makes it doubly hard for physicians to officially endorse the construction of illness narratives, which are nothing if not vehicles by which to seek out purpose.

The problem, of course, is that if 1,2 and 3 are correct, they show why narrative construction is so appealing to patients. Because narratives are definitional, patients can use them to define their illness as belonging to their life story. And a central tenet of both psychology and religion is that it is through acceptance – through the process of admitting, at a deep level, that something one dislikes nevertheless has happened – that people come to terms with illness and death. Thus where a physician's mechanistic explanation of disease might posit it as either a random or a determined event – in either case, ultimate context becoming irrelevant – the patient uses narrative to create such a context. The question of why humans seek to understand ultimate contexts is left for the reader to suggest; given that we do, this model should shed some light on the discrepancy of attention separating doctors and patients with regard to illness narrative.³

It should now be clear that I am suggesting physicians to be intellectually hostile to the question *why* insofar as they believe the question *how* and its answers may reveal that there is no ultimate context for

³ It should also strike the reader as bearing a strong similarity to the ongoing war between creationism and evolution, which is nothing if not a conflict over whether a mechanistic explanation of life on earth augers the irrelevance of religious narrative.

human suffering. But do the question *why* and the question *how* exist in a zero-sum world, in which they compete to explain disease? I will suggest that they do not, and that modern science has committed a thought error in believing them to. To explain the mechanism of disease is not to render irrelevant its ultimate context. Physicians who realize this may feel a bit more confident about encouraging patients to explore the question *why* than they otherwise would.

In Chapter Three I will discuss the problematic dichotomy of objectivity and subjectivity, which is widely used in medical thought. I will suggest that by “objective” phenomena we mean those that are potentially public, and have location in space, while we call “subjective” those phenomena that are irrevocably private and do not have location in space. I will suggest that, following the lead of modern science, physicians are heir to two tendencies concerning this dichotomy, both of which may alienate patients. First, they seek to correlate patients’ subjective experience with objective findings, and once this is done, preferentially handle the objective correlates. In doing this, they recapitulate Cartesian Dualism, which holds that the subjective and objective worlds are correlated with one another, and that handling one brings the other in tow regardless of the nature of the connection between them. For example, physicians correlate joint pain (a subjective experience) with joint inflammation (an objective phenomenon), and once this is done, preferentially handle and discuss the inflammation. Because this allows them to cease discussing the subjective experience itself, patients may believe they are ignoring the subjective experience, ushering in the charge of impersonality.

Second, physicians frequently move beyond Cartesian dualism into assumptions associated with what philosophers have termed “materialist monism.” They assume that correlation bespeaks causality; the objective correlates are said to be causing the subjective experience. For example, faced with an ill patient refusing medical treatment, the doctor may say something like “the patient is unable to breathe but insists that he is fine, therefore he is delirious. Low oxygen is causing delirium is causing treatment refusal. Therefore ignore the refusal and treat; corrected blood oxygen will cause a retroactive request for treatment – that is, gratefulness.” This is significant because once the patient’s subjective experience becomes the basis for a diagnosis that rejects it as a truth claim, the subjective quality *qua* subjective quality disappears in the physician’s mind. Subjective experience ceases to be autonomous from the physical world, and

instead becomes an expression of it. When this happens, the patient loses standing to serve as an arbiter of subjective truth, which is an important privilege granted the *res cogitans* in traditional dualism, and one that most Americans grant each other as a matter of courtesy and law. It is the loss of this power that, in combination with physicians' tendency to talk about objective correlates rather than subjective experience, can leave the patient feeling abandoned, which in turn can lead to the charge of impersonality. At the end of Chapter Three I will discuss some of the current attacks on the assumptions underlying both Cartesian dualism and monism.

In Chapter Four I will discuss the dichotomy of micro-reductionism (the process of breaking an object into its component pieces, and describing it in terms of them) and holism (the process of embedding an object in larger organizing structures), arguing that medicine prefers the former process to the latter. That is to say, doctors tend to break bodies into organs, organs into cells, cells into molecules and DNA, rather than placing patients in larger social and moral contexts – a task reserved for the anthropologist and the priest. Further, I will suggest that physicians start their reductions at the boundary of the body – they dive into and under the patient's skin in the search for disease. In doing so, doctors may miss those emergent phenomena which exist at the interface of the self and the larger structures (social, moral, aesthetic) in which it is embedded. Again, because these emergent phenomena – social roles, for example – may be deeply important to patients, some may be put off by their physician's failure to perceive them.

I will go on to suggest that many physicians do not feel licensed to “believe” in emergent phenomena – that is, to believe that wholes exhibit causal powers or have properties that cannot be predicted from even the most thorough knowledge of their parts. Rather, physicians are encouraged to believe that the parts “make” the whole. I will review one compelling reason to suspect that emergent properties are real. As Ken Wilber, Stuart Kaufmann, and Per Bak have suggested, in isolation parts have many more degrees of freedom than they do than when connected to one another. Yet behavior becomes probable, and therefore predictable, when a part's degrees of freedom are so limited that it becomes difficult for it to behave in anything but an idiosyncratic way. Therefore the more an observer knows about the total context in which a part is placed, the better able she will be able to predict its behavior. Along these lines, the physician may find it difficult to treat patients to the extent that their total context – which constrains their behavior and informs their illness – remains unknown.

In our final chapter, Chapter Five, I will summarize what we have learned in Chapters Two through Four, and will revisit our definition of the impersonal physician. I will note that physicians employ several intellectual techniques that, if used thoughtlessly, can result in a failure to perceive meaning. This failure of perception induces a failure of engagement. I will then suggest that an analog of this process occurs at the societal level, with results that actively harm the medical profession. Moral phenomena, like meaning, are collective or holistic, immaterial, and definitional. As a result, the peer culture of the physician has as much difficulty perceiving moral phenomena as it does meaning; as a result, it has difficulty engaging moral systems as well as patient's illness narratives. The problem, from the physician's perspective, is that moral systems, unlike patients, often have enormous power to affect daily medical practice. As a result, physicians as a group are in danger of being manipulated by moral systems, such as HMOs, whose behavior their peer culture encourages them not to understand. This is one lesson to be derived from Paul Starr's *The Social Transformation of American Medicine*. Seen in this way, the problem of the impersonal physician comes to seem a problem not only for patients, but for the physician herself.

Chapter 2: How and Why

My patient, a physician who has cancer, comes to his session enormously pleased with himself. Knowing my love of stories, he says that he has found a perfect story and tells me the following parable:

Shiva and Shakti, the Divine Couple in Hinduism, are in their heavenly abode watching over the earth. They are touched by the challenges of human life, the complexity of human reactions, and the ever-present place of suffering in the human experience. As they watch, Shakti spies a miserably poor man walking down a road. His clothes are shabby and his sandals are tied together with rope. Her heart is wrung with compassion. Touched by his goodness and his struggle, Shakti turns to her divine husband and begs him to give this man some gold. Shiva looks at the man for a long moment. "My Dearest Wife," he says, "I cannot do that." Shakti is astounded. "Why, what do you mean, Husband? You are Lord of the Universe. Why can't you do this simple thing?"

"I cannot give this to him because he is not yet ready to receive it," Shiva replies. Shakti becomes angry. "Do you mean to say that you cannot drop a bag of gold in his path?"

"Surely I can," Shiva replies, "but that is quite another thing."

"Please, Husband," says Shakti.

And so Shiva drops a bag of gold in the man's path. The man meanwhile walks along thinking to himself "I wonder if I will find dinner tonight – or shall I go hungry again?" Turning a bend in the road, he sees something on the path in his way. "Aha," he says. "Look there, a large rock. How fortunate that I have seen it. I might have torn these poor sandals of mine even further." And carefully stepping over the bag of gold, he goes on his way.

It seems that Life drops many bags of gold in our path. Rarely do they look like what they are. I ask my patient if Life has ever dropped him a bag of gold that he has recognized and used to enrich his life. He smiles at me. "Cancer," he says simply. "I thought you'd guess."

- Rachel Remen, *Kitchen Table Wisdom* (1996)

When a doctor and patient meet, they embark on a journey together, in which they share the common goals of explaining, and then resolving, the patient's difficulties. As a first step, each must decide what questions to ask of the disease. In this chapter I will suggest that while patients are interested in two questions – "why me?" and "how did this happen?," physicians feel professionally licensed to examine the latter one only. Tension can result when patients wish their doctor would address the question *why* as well.

The central argument of this chapter is that physicians duck the question *why* because they lack, by choice and training, the intellectual tools needed to answer it. This is because *why* questions are frequently answered with teleological reasoning, and since the start of the Enlightenment science has fought vigorously against this mode of thought.

This chapter will be divided into several sections. In the first, I will briefly define two concepts from Aristotle, final causality (teleology) and efficient causality, around which the chapter is based. In the

second, I will discuss the usefulness of the question *how* to both physician and patient. In the third, I will discuss the usefulness of the question *why* to the patient. This contrast should help the reader understand why the physician's reluctance to answer *why* might be painful to the patient. In the fourth, I will suggest that this "problem" is not easily solved, because physicians consciously maintain several intellectual defenses against teleological and rationalist thought, and are unlikely to give these defenses up readily. In the fifth, I will discuss several current intellectual arguments designed to undermine the *how* – *why* conflict. Throughout, my goal is not to pass judgment on the conflict, but to provide the reader with a simple framework with which to think about it.

Teleology (Final Causality) and Efficient Causality

Final and efficient causality are two of the four types of causality set forth by Aristotle; as summarized by the philosopher Simon Blackburn,

If we think of an example of something that is produced by an agent, such as a statue, then the *material* cause is the substance or material that constitutes the statue; the *formal* cause is the pattern or blueprint determining the form of the result; the *efficient* cause is the agency producing the result; and the *final* cause is that for the sake of which the result is produced, i.e. the end towards which the production is directed. [Blackburn (1996) 60]

Efficient causality is easy enough to understand; it is what modern science means when it uses the word "cause." For example, the efficient cause of rheumatoid arthritis is that a virus or bacteria induces an auto-immune reaction in a woman, whose T-cells then release lytic cytokines that destroy her synovial membranes, resulting in joint destruction. [Robbins (1994) 125] Efficient causes precede their effects.

Final causality is significantly more complex; my argument rests on the understanding that it has two distinct variations, one of which is dismissed by modern science, the other of which is forgotten. The first type is the best known.¹ As Bertrand Russell defines it, "the 'final cause' of an occurrence is an event in the future for the sake of which the occurrence takes place." [Russell (1945) 67] To the modern mind, this would seem to raise two possibilities, and at first glance it is not clear which one is intended. *Either* the future has the causal power, and is pulling the occurrence forwards (an arrow in flight is being "pulled" by

¹ Though teleology is rejected by modern science as an ontological claim, it is frequently used heuristically. The thyroid gland is "trying" to increase the body's metabolic rate; I get fevers "so that" I can denature the enzymes in invading bacteria, and so forth. Teleology saves time and energy when describing phenomena, and is easy for people, who expect intentionality, to understand. But it isn't "true."

its final cause, the target towards which it is headed, just as it is being “pushed” by its efficient cause, the bow from which it springs), *or* the present has the causal power, in the sense that the occurrence “knows” where it is going, and modifies its own movement so as to get there. In this view of things, the arrow “knows” that it is trying to hit the target. It would seem, to the modern mind, that by no other mechanisms than these two could an occurrence take place “for the sake” of the future.

Now to the modern mind the first interpretation seems impossible. As most of us believe, the future does not control the present; only the past controls the present. Thus the arrow moves forward because of the movement of the bow. It most assuredly is not moving because the target is pulling it! And to the modern mind, the second possibility – that the occurrence knows where it is headed – seems like nonsense when applied to inanimate objects. Obviously the arrow doesn’t “know” that it is meant to hit the target; this is why the marksman must aim it properly. While at first the second possibility *does* seem reasonable for any entity capable of thought – people can know where they are going, and what they are trying to do; people entertain purposes – it is soon enough revealed as fallacious. Purposes exist in the present, and serve as motivators of future speculative action. Goals or purposes are therefore efficient causes, not final ones. And this shows why most moderns reject final causality as having any ontological standing.

In this chapter I will suggest a second understanding of final causality that is not widely discussed, but which is used today by those who seek to answer the question *why*. It recognizes that, contra the definition given above, a final cause is not merely an efficient cause lodged in the future. Rather, final causality references the ultimate context in which events occur, which is to say, the narrative integrity of the story of which they are a part.

To get a feel for this, note that when we reach the end of a story, the finale imposes coherence on events that occurred earlier, and thus seems, in retrospect, to be the final cause towards which everything else has been moving. For example, when the Huntsman chops open the wolf’s belly, and Grandmother falls out, Little Red Riding Hood’s trip through the woods falls into place. It does not fall into an efficient-causally determined place: the woodsman didn’t chop *because* she skipped through the woods; she didn’t skip *so that* he could chop; and his chopping did not *enact* her skipping. Rather, it falls into narrative place. The listener understands that Little Red Riding Hood skipped through the forest, headed towards the Wolf and

the Huntsman's axe, because those events all belonged together. They belong together by definition, "because that's how things happened;" they do not belong together because of causal connections.²

In this sense, to say that an event has a final cause is to believe that it plays an irreplaceable role in a larger story. Although the listener does not yet know what this larger role is, she is asked to trust that it exists. This is the essence of most religious belief, and is crucially important to patients seeking to integrate illness into their life stories.

Having now defined final and efficient causality, I am ready to begin my argument.

The Usefulness of the Question *How* To Both Doctor and Patient

The question "how did this happen?" is the most important question a physician can ask about a disease; patients pay doctors in the hope that they may answer it. *How* questions ask about the efficient cause, or mechanism, by which one event leads to another. *How* questions are employed by those who wish to alter the world. Once the mechanism underlying a process is elucidated, the possibility arises that it might be modified so as to produce a novel outcome.³

For western science, and allopathic medicine, how questions are almost always answered by positing a sequence of chronologically ordered events terminating in the disease in question. In a proper mechanism, past events cause future events; future events neither cause nor affect past events. [Popper (1953/1988) Carnap (1966/1988), Giere (1984/1988), Russell (1945)] As it turns out, this chronological requirement does not hold when constructing answers to the question *why*

In summary,

1. Physicians are paid by patients to answer *How* questions.
2. *How* questions are answered mechanistically, by positing efficient causes.
3. In a proper mechanism, past events lead causally to future events, rather than vice versa.

² This idea was developed while reading Burt's 1952 *The Metaphysical Foundations of Modern Science*, in which he repeatedly emphasizes that for the Scholastics, for whom final causality was quite important, all events in the natural world were seen as playing a role in a divine drama.

³ Knowledge of mechanism is not required to treat disease; many medical substances, such as aspirin, were employed long before their mechanism was known. But the more detailed the understanding of mechanism, the more likely a focused, successful attack on the problem becomes. This is why most basic science is aimed at uncovering mechanisms.

The Usefulness of the Question *why* to the Patient

Before discussing the question *why* I should note that the word “why” is often used to ask questions about mechanisms, which I have defined as *how* questions. For example, in the context of science, the question “why do people eat?” asks about the larger mechanism in which the act of eating is embedded. A proper answer might be “in order to get nutrition.” This is different from the question “how do people eat,” which requires answers describing the sub-mechanisms that make eating possible, such as “by chewing food.” The two words send the respondent in opposite directions, along a single continuum; one is holistic, the other reductionistic, but the same sequence of mechanistic events is sought by both.⁴ This is not the use of *why* I mean to discuss.

According to my definition, *why* questions often arise when *how* questions have led to a dead-end of ignorance. They are spiritual, religious, or existential in nature, and ask for the ultimate meaning of phenomena. Classic *why* questions include “why is there suffering in the world?” and “why must we die?” In each case, mechanical answers are regarded as small-minded.

Confronted with devastating illness, many patients ask “why me?” [Callahan (1993), Kleinman (1988)] In part the *why* here is seeking some *How* answers about the etiology of disease – for example, did the patient eat too much fat? But it asks about meaning as well. And as such, mechanistic answers will not do. Many patients find that *why* questions can be answered with a narrative. A significant literature, emanating from psychoanalysis, philosophy, religious studies, and the new field of Literature and Medicine, focuses on the nature of illness narratives. [To name a few: Callahan (1993), Sacks (1987), Kleinman (1986), Nishitani (1982), Lifton (1976), Kubler-Ross (1969), Jung (1964), Kaufmann (1956), May (1953), Tillich (1952)] The general consensus is that some patients may use a pre-existing narrative, such as the Bible,

⁴ To see that both *how* and *why* get at the same sequence of causally connected events, consider that “how do people eat?” yields the answer “by chewing their food.” Asking how they chew their food yields “by moving their jaw muscles.” Asking how to this yields “by sending nervous impulses to them,” and from there we descend into physiology, ending, perhaps, with the interaction of actin and myosin chains within individual muscle cells. If we now switch directions, and seek to move from the actin and myosin chains back to the phenomenon of eating, we find that the word we need is “why.” “Why do actin and myosin chains interact?” yields the answer “to move the muscle.” “Why does the muscle move?” yields “to move the jaw.” “Why does the jaw move” gets us back to the starting phenomenon. The point is that this use of the question *why* is *not* the one I am interested in. Here, the word *why* is actually asking about the opposite direction. Moreover, once a complete feedback loop is constructed, the question *why* can be dropped completely, an issue we explore later. For the purposes of this chapter, all questions seeking mechanistic answers, regardless of their phrasing, are called “*How* questions.”

while others may construct one from scratch. In either event, as the physician and anthropologist Arthur Kleinman puts it,

Patients order their experience of illness – what it means to them and to significant others – as personal narratives. The illness narrative is a story the patient tells, and significant others retell, to give coherence to the distinctive events and long-term course of suffering. The plot lines, core metaphors, and rhetorical devices that structure the illness narrative are drawn from cultural and personal models for arranging experiences in meaningful ways and for effectively communicating those meanings Illness narrative... like the ritual use of myth, gives shape and finality to a loss. [Kleinman (1988) 49-50]

Crucially, narrative is capable of giving order to events that do not fall into a causal sequence, a power mechanistic explanations do not share. As Larry Churchill writes,

Stories... may not be progressive or aesthetically appealing. The logic of these stories, above all, cannot be expected to be fully consistent, or rational.... The narration of the meaning of death [or illness] does not follow a catenarian, or chain-like sequence, but follows the story-line, with inconsistencies, sudden turns and proleptic movements. Stories may contain contradictions. [Churchill (1989) 30-31]

Thus a central capacity of narrative is to bypass the requirements that govern answers to *How*. Narratives need not restrict themselves to discussing events that fit into a mechanism by virtue of their causal power. Rather, they may include any event the patient wishes. Narrative is, in many ways, a definitional process. Narratives legitimize illness, and facilitate the process of acceptance by answering the question *why* with the definitive answer “just because,” or, alternately, “why not?”

I want to emphasize this definitional quality; I think fairy tales do this nicely. The redness of Little Red Riding Hood’s riding hood plays no discernible causal role in her grandmother’s near-death experience, and is not a part of the mechanism by which a scientist might explain the wolf’s enlarged abdomen. Narratively, however, the story is defined by the hood; moreover, as any four year old will protest should you claim otherwise, it cannot be green, or purple, or omitted. It must be red. Why? Just because.

Compelling definitions often require the narrator to employ the second variety of teleology defined above. That is to say, the narrator says “these all belong in the story because the ultimate context in which each occurs includes the others as well.” Put more technically, life-stories are fields of elaborately interconnected events, both real and imagined, both future and past, all of which are weighted to reflect their importance, and connected in ways that allow them to reference and echo one another. To add illness to one’s life-story is to change the ultimate context in which all previous life-events took place.

Technically, this occurs via a shift in the structure of the field, and the weighting of its component parts; this reworking results in a modification of meaning, which in some senses is the subjective experience of the field.⁵ Were the patient now to retell his life story in chronological order, events that, prior to the advent of the new “ultimate context” might have been of minor importance, now may be of great importance. For example, a man recently paralyzed may find intensely meaningful his memory of walking down the street moments before being hit by the car; had he never been paralyzed, he likely would have forgotten that particular event. This should stand in stark contrast to an “efficient causality” explanation of the man’s walking, which is *unaffected by the events that followed it*.⁶

The crucial point is not that the patient modifies current behavior in order to alter the future – this is efficient causality at work. Nor is it that the current disease causes the patient to remember facts from his past that would otherwise have remained dormant. This too is a form of efficient causality – the current crisis causes the patient to scrutinize his memory. Nor is it that new scientific knowledge forces a reevaluation of the disease; we are assuming static information. Rather, it is that the patient’s truth-claims about the past are *altered* by the present disease in a way unacceptable to those who believe that the future cannot affect the past. The weight attached to the man’s walking – its meaning – is altered by the accident, while the mechanism by which it occurred is not. Time is not an obstacle to shifts in the structure of the field, where in mechanistic explanations it would be. From a mechanistic perspective, once the past is gone, it is set in stone; from the perspective of narrative, it is subject to perpetual revision.

The capacity of the present to affect the interpretation of the past – what the past means – is what marks narrative creation as teleological – albeit, the teleology is retroactive.⁷ The alternate process, in which the

⁵ This metaphor is a play on Quine’s, taken from “Two Dogmas of Empiricism” [Quine (1953)] It also resembles neural-net models of the brain, in which each neuron is connected to thousands of others directly, and all others by proxy. Note that I seem to be defining meaning as, in part, a reflection of the degree to which the meaningful event is connected to other events. In some senses, meaning is a product of the degree of embeddedness an object or event plays in a life-story. Other factors are doubtless at play, such as the value or weight attached to the objects or events.

⁶ Perhaps a better example comes from the world of sports. If two teams are playing in a championship game, and one, losing all along, pulls out a stunning come-from-behind win in the final 15 seconds, the entire game will become one marvelous, often-told story for its members. Had they not eventually won, the entire game would have been eagerly forgotten. The finale of the game alters the meaning the team ascribes to its body. This is clearly different from a mechanistic or efficient-causality explanation of how the game evolved, in which every play would be described identically regardless of who eventually won.

⁷ For example, a patient diagnosed with liver cancer may suddenly recall that his beloved third grade teacher, when he was nine, died of the disease; the grief he experienced then, long dormant, may arise to inform his current feelings. Conversely, his current understanding of his teacher may be so deepened that

future affects the present, is equally teleological. Faced with a new disease, patients may speculate about the ultimate context in which it occurs. Is this a punishment from God? A random event? Will it become a story of hope triumphing over the odds? Will it evolve into a tragedy? Each speculation alters the patient's understanding of his predicament, and he may swing wildly from hope to despair, even in the absence of new medical information, simply by his choice of the telos towards which the disease is headed. Again, this should seem quite distinct from a mechanistic understanding of the new disease, which stands regardless of the ultimate narrative context in which it occurs. Whether rheumatoid arthritis is a crisis or an opportunity, a chance for spiritual awakening or a prescription for despair, the doctor will maintain that the T-cells are destroying the synovial membranes according to unchanging mechanistic principles.

In summary, three points are of crucial importance, and should be contrasted with the three points from the section above:

1. Physicians are not paid to answer *why* questions, although they are quite important to patients.
2. *why* questions cannot be answered mechanistically, but can be answered narratively.
3. In constructing a narrative, events that occur later in time often force a narrative reworking of events that occurred earlier.⁸ This results in the appearance of teleology when patients tell their narratives in a past → future chronology. This is quite different from mechanistic explanations, in which explanations are not modified by subsequent events.⁹

Intellectual Defenses Against the Question *Why*

At this point we have painted a fairly stark portrait: doctors and patients share the primary goal of asking and then answering the question "how did this disease occur?" in the hopes of altering the

he may be unable to recall how he thought of him previously. The teleological problem arises at this point. Were the patient to now relate his life story in chronological order, the importance of the teacher's illness would be quite elevated relative to its place ante-diagnosis; to a listener, it might appear that the past event now narratively anticipates the future one. This manipulation of the past so as to anticipate the future is a form of teleological thinking, which is verboten in science. As mentioned above, in science, past events affect future events, but not vice versa.

⁸ This is familiar to psychotherapeutic practitioners and patients. See Hart's "Re-Authoring the Stories we Work By: Situating the Narrative Approach in the Presence of the Family of Therapists." [Hart (1995)]

⁹ Unless, of course, scientific knowledge changes and requires a reinterpretation. This discussion assumes stability of knowledge.

illuminated mechanism so as to cure the patient. Patients, in addition, ask the question “why me?” and seek to answer it with illness narratives that integrate unexpected and unwanted dysfunction into their life story.

The focus of this thesis is on how the intellectual assumptions of the physician exacerbate doctor-patient miscommunication. In this section I will offer several explanations for why some doctors avoid the question “why me?,” and thus do not easily engage in helping patients to construct illness narratives.

* * *

Science employs a variety of defenses mechanisms against the question “why?,” which I will divide into weak and strong categories. Weak defenses acknowledge the question “why?,” but claim that it is not the business of physicians, or science, to answer it. This splitting of how from why has historical roots. Strong defenses subvert this first response, and seek to reconceive *why* questions as *How* questions, thereby eliminating them entirely.

In making my case I will draw upon the scientific literature which forms the backdrop of medical science. While my argument descends into detail at several points, my overriding goal is to show that physicians employ a variety of defenses against teleological thought, and thus against the question why.

The Weak Defenses

The weak defenses argue that physicians ought avoid teleological thought when trying to explain a patient’s illness, but agree that teleological thought holds an important place in human life. These defenses have their roots in history, particularly in the revolt of Enlightenment scientists such as Bacon, Galileo, Newton and Boyle against the preceding paradigm, Scholasticism. [Burt (1954)]

Scholasticism was the dominant philosophical approach in Europe during the medieval period, from the 12th century until the 16th, and was the backdrop against which modern western science arose, as well as the paradigm against which it fought. [Blackburn (1996) 342] As E.A. Burt has explained in *The Metaphysical Foundations of Modern Science*, Scholastics were obsessed with teleology.

On the teleological side, an explanation in terms of the relation of things to human purpose was accounted just as real as and often more important than an explanation in terms of efficient causality, which expressed their relations to each other. Rain fell because it nourished man’s crops as truly as because it was expelled from the clouds. Analogies drawn from purposive activity were freely used. Light bodies, such as fire, tended upward to their proper place; heavy bodies, such as water or earth, tended downward to theirs. [Burt (1952) 18-19]

This was maddening to the founders of modern western science, who felt that to understand the ultimate purpose of the universe was well and good, but should not be conflated with a proper understanding of its underlying mechanism. For example, in 1672 Robert Boyle, the father of modern chemistry, complained, using a popular metaphor for God (watchmaker) and the universe (a watch):

He must be a very dull inquirer who, demanding an account of the phenomena of a watch, shall rest satisfied with being told, that it is an engine made by a watchmaker; though nothing be thereby declared of the structure and coaptation of the spring, wheels, balance, and other parts of the engine, and the manner, how they act on one another, so as to co-operate to make the needle point out the true hour of the day. [Boyle (1672), in Burt (1952) 178]

As Burt documents, Scholastics were often so obsessed with final causality that they made little headway in their inquiries into efficient causality; Boyle and his contemporaries determined that a ban on answering questions of final causality was the best way to make efficient causality the subject of serious academic inquiry. For Burt, this is most apparent in the work of Newton, whose metaphysics continue to drive scientific inquiry into the present. [Burt (1952)] As Burt notes, Newton clearly understood that his equation explained how gravity worked, but that it said nothing about why gravity exists in the first place. Newton regarded himself as exposing the mechanism of gravitational attraction, not its purpose, and the distinction was deeply important to him. In a letter to his friend Bentley, he writes “you sometimes speak of gravity as essential and inherent to matter. Pray do not ascribe that notion to me; for the cause of gravity is what I do not pretend to know.”[Newton (1779) in Burt (1952) 291] As Burt describes it, Newton was adamant on this point, because so many of his contemporaries expected that a knowledge of the mechanism of gravity could be parlayed into one about its purpose, or, as Newton calls it, “cause,” by which he means final cause.

In the centuries following Newton’s attack on “hypotheses,” science came increasingly to regard speculation about the telos of natural phenomena as unprofessional, and thus the answers to *why* questions became, increasingly, the province of other disciplines, such as religion or philosophy. [Burt (1954)] This avoidance of hypotheses has come to be known as positivism, and is arguably the dominant philosophy of medicine. “The central position of positivism,” writes Burt, is that “it is possible to acquire

truths about things without presupposing any theory of their ultimate nature.”[Burt (1952) 227]¹⁰ In this position we can see a thorough rejection of teleology. Positivism holds that you do not need to know the purpose of a thing – its why – in order to investigate and understand its mechanism – its how. For Burt this is more simply stated as “it is possible to have a correct knowledge of the part without knowing the nature of the whole.” In other words, we do not need to know what the future holds for an object in order to understand its behavior in the present.

For Newton and his contemporaries, the attack on teleology was fused with an attack on “uncontrolled speculation” which today we might call rationalization. Their insight was simple: given an *a priori* telos towards which an event is seen as headed, and denied access to empirical data supporting one’s assumption, it makes sense to employ deductive reasoning, or rationalism, in an effort to connect the event to the telos. While deductive reasoning is widely used in science when the starting principle is empirically established, or when a theory is being used to generate testable hypotheses, it is not accepted when the telos or starting principle is taken *a priori* and the thinker is expected to make veridical statements about the structure of the world.

Boyle complained about this problem three centuries ago.

And truly... if men could be persuaded to mind more the advancement of natural philosophy than that of their own reputations, it were not, methinks, very uneasy to make them sensible, that one of the considerablest services that they could do mankind, were to set themselves diligently and industriously to make experiments and collect observations, without being overforward to establish principles and axioms, believing it uneasy to erect such theories, as are capable to explicate all the phenomena of nature, before they have been able to take notice of the tenth part of those phenomena, that are to be explicated.[Boyle (1672) in Burt (1952) 188-9]

Boyle’s plea here is for scientists to “notice” the world before erecting “theories” about it; this amounts to a plea for empiricism to precede rationalism. The dichotomy between these two ways of thinking was established firmly in the Enlightenment, and continues to this day.¹¹

¹⁰ Note that this definition of positivism has major implications for our fourth chapter, on parts versus wholes.

¹¹ Francis Bacon sets them forth quite amusingly as well:

“There can be only two ways of searching into and discovering truth. The one flies from the senses and particulars to the most general axioms, and from these principles, the truth of which it takes for settled and immovable, proceeds to judgement and the discovery of middle axioms. And this way is now in fashion. The other derives axioms from the senses and particulars, rising by a gradual and unbroken ascent, so that it arrives at the most general axioms last of all.

Rationalism as a method for producing new information about the world is not much trusted in modern medical circles, for the same reasons that Boyle disliked it: one can easily enough make up a story about disease that sounds plausible, but if one never empirically tests the implicit hypotheses of the story, one will never know whether, in fact, it is correct. Further, patients are often suspected of rationalizing about their illnesses, and thus only at the physician's peril are their accounts of their disease taken at face value. At the extreme, rampant rationalization is termed "confabulation," and is considered a symptom of disease. An example of this is given in Oliver Sacks's *The Man Who Mistook His Wife for a Hat*, in which he describes a patient without short term memory.

He remembered nothing for more than a few seconds. He was continually disoriented. Abysses of amnesia continually opened beneath him, but he would bridge them, nimbly, by fluent confabulations and fictions of all kinds. For him they were not fictions, but how he suddenly saw, or interpreted, the world. Its radical flux and incoherence could not be tolerated, acknowledged, for an instant – there was, instead, this strange, delirious, quasi-coherence, as Mr Thompson, with his ceaseless, unconscious, quick-fire inventions, continually improvised a world around him – an Arabian Nights world, a phantasmagoria, a dream, of every-changing people, figures, situations – continual, kaleidoscopic mutations and transformations. For Mr Thompson, however, it was not a tissue of ever-changing, evanescent fancies and illusion, but a wholly normal, stable and factual world. So far as *he* was concerned, there was nothing the matter. [...]

We have, each of us, a life-story, an inner narrative – whose continuity, whose sense, *is* our lives. It might be said that each of us constructs and lives, a 'narrative,' and that this narrative *is* us, our identities. [...]

To be ourselves we must *have* ourselves – possess, if need be re-possess, our life-stories. We must 'recollect' ourselves, recollect the inner drama, the narrative, of ourselves. A man *needs* such a narrative, a continuous inner narrative, to maintain his identity, his self.

This is the true way, but as yet untried." -- Francis Bacon, Aphorism XIX of the Novum Organon [Bacon (1620) in Burt (1939)]

Webster's defines Bacon's first way, rationalism, as "a theory that reason is in itself a source of knowledge superior to and independent of sense perceptions." Rationalism is typically contrasted with empiricism, which is defined as "a theory that all knowledge originates in experience." Related dichotomies are deductive reasoning versus inductive reasoning, and analytic statements versus synthetic statements.

As this chapter will emphasize, medicine prefers to use empirical methods, based on observation and testing, whenever possible in its efforts to understand and alter the course of disease.

Table 1: Dichotomy of Rationalism v. Empiricism

Rationalism	Empiricism
Deductive Reasoning	Inductive Reasoning
Trusts reason, distrusts senses	Trusts senses, distrusts reason
Given the present state of things, explains what things must have been like in the past.	Given the present state of things, predicts the future.

This narrative need, perhaps, is the clue to Mr. Thompson's desperate tale-telling, his verbosity. Deprived of continuity, of a quite, continuous, inner narrative, he is driven to a sort of narrational frenzy – hence his ceaseless tales, his confabulations, his mythomania. Unable to maintain a genuine narrative or continuity, unable to maintain a genuine inner world, he is driven to the proliferation of pseudo-narratives, in a pseudo-continuity, pseudo-worlds peopled by pseudo-people, phantoms. [Sacks (1987) 110-111].

Sacks's description illustrates nicely the nexus of teleology, rationalism, and narrative. Faced with fractured events that he is driven to integrate into his life-story, Mr. Thompson rationalized continually in an effort to connect the past or present to the future.

For Burt, the proscription against teleology, and the rationalism by which teleological explanations are effected, “was enough to save science her opportunity for further stupendous victories in the mathematical interpretation of the world.” [Burt (1952) 102] It is important to stress here that Burt, like most scientists, see a clear tradeoff between “stupendous victories” on the one hand and “uncontrolled speculation” on the other. An awareness of this tradeoff plays a powerful role in medical doctors' reluctance to engage professionally in teleological thought.¹² In seeking stupendous victories over illness, they are reluctant to spend much time in a world of uncontrolled, unconfirmable speculation.

It should now be clear that physicians' belief that *why* questions are best left to others is a “weak” defense because it does not reject teleology out of hand; it chooses simply to leave it to others, such as the clergy. In the section that follows, I will examine some more aggressive defenses.

The Strong Defenses

“The more detailed and complete the explanation of how a machine works, the less it matters why it exists.” – Martin Hollis

In this section I want to point out that a second variety of defense against the question *why* is employed by physicians. Here, the physician implicitly denies the importance of the question by collapsing it into the question *how*. This is done first with the notion that human beings are elaborate conglomerations of biological feedback loops, and second with the assertion that all events are the products of either chance or

¹² It is ironic, of course, that mathematics, the ultimate rationalist, deductive reasoning discipline, should be so important to physicians. Perhaps I can work a discussion of this into a later version of this chapter.

necessity. In both these ways, the physician may unconsciously undercut efforts to imbue disease with meaning, in which, as described earlier, it must be placed in an ultimate context towards whose finale it appears narratively headed.

Feedback Loops

Feedback loops threaten the concept of meaning; to see this, we must follow a train of reasoning that may at first seem off the point.

Most students of biology are familiar with the notion of homeostasis. Organisms have equilibrium states that they seek to perpetuate over time. The classic example in mammals is that of body temperature: despite extreme fluctuations in the external temperature, mammals keep themselves close to 100° F; they have homeostatic mechanisms to do so. Many students are amazed to find that *homeostasis at no point requires the oversight or intervention of a controlling intelligence*.¹³

As she realizes that system after system is self-perpetuating, and set-point after set-point (temperature, weight, plasma volume, electrolyte level) is self-maintaining, the student begins to catch hold of a wonderful, terrible idea: perhaps *every* aspect of the human body can be explained in terms of unconscious homeostatic mechanisms. Perhaps people are merely giant, self-sustaining machines composed of thousands of nested feedback loops; perhaps the mind is merely a product of automatic processes; perhaps we have no free will; perhaps our decisions, our feelings, are determined by physical laws.

This is the implication of Darwinism, which is the conceptual backdrop of virtually all of modern biological science. The essence of Darwinism is the idea that *nothing succeeds like success*, which, being a

¹³ An excerpt from a popular text on physiology illustrates the sort of process the medical student is likely to come across throughout her training.

Because oxygen is one of the major substances required for chemical reactions in the cells, it is fortunate that the body has a special control mechanism to maintain an almost exact and constant oxygen concentration in the extracellular fluid. This mechanism depends principally on the chemical characteristics of hemoglobin, which is present in all red blood cells. Hemoglobin combines with oxygen as the blood passes through the lungs. Then, as the blood passes through the tissue capillaries, hemoglobin, because of its own strong chemical affinity for oxygen, does not release the oxygen into the tissue fluid if too much oxygen is already there. If the oxygen concentration is too low, however, sufficient oxygen is released to re-establish adequate tissue oxygen concentration. Thus, the regulation of oxygen concentration in the tissues is vested principally in the chemical characteristic of hemoglobin itself. [Guyton (1996) 6]

The point here is that nobody is deciding to deliver more or less oxygen to the tissues depending on circumstances. No intelligence is involved at all. Rather, hemoglobin has been constructed in such a way that this happens automatically; indeed, the body is hard-pressed to deliver the "incorrect" amount of oxygen to its cells, so ingenious is the construction of hemoglobin.

circular statement, describes a feedback system of sorts. Genes that create organisms that successfully reproduce thereby perpetuate themselves over time. In a sense, then, the gene is a set-point; the organism's behavior is modulated in such a way as to continually return to the set-point, in the case of humans this is done by reproducing and making a new set of genes.

This notion has perhaps its most literate advocate in Richard Dawkins, the British biologist. In *The Selfish Gene* Dawkins writes that life began when ribonucleic acids (RNA), floating free in the primordial oceans, became capable of replicating themselves. This replication, which occurred not because God or some other intelligence commanded it, but merely because it was thermodynamically favorable, took on a life of its own. Those "replicators" that best acquired food survived, and those that made more copies of themselves came to dominate the gene pool; those that were relatively poor at either task died off.¹⁴ This led to a *de facto* competition in which, curiously, none of the competitors was conscious; this competition created selection pressures that favored ever more "clever" replicators. And the end result? Mammalian life, and human beings. As Dawkins puts it,

Four thousand million years on, what was to be the fate of the ancient replicators? They did not die out, for they are past masters of the survival arts. But do not look for them floating loose in the sea; they gave up that cavalier freedom long ago. Now they swarm in huge colonies, safe inside gigantic lumbering robots, sealed off from the outside world, communicating with it by tortuous indirect routes, manipulating it by remote control. They are in you and in me; they created us, body and mind; and their preservation is the ultimate rationale for our existence. They have come a long way, those replicators. Now they go by the name of genes, and we are their survival machines. [Dawkins (1976) 21]

In Dawkins's portrait, human beings are "survival machines" and "gigantic lumbering robots." Nothing about a human being, not even her mind, is anything but an exquisite product of this ancient, automatic, physical competition between molecules of ribonucleic acid.

The point of all this is to show that those who see human beings as being highly complex robots cast doubt on the prospect that our lives, including our life-stories, have any extrinsic meaning – that is to say, any ultimate purpose. Again, this implication may not at first seem clear; to see the meaning-mechanism tradeoff, we should turn our attention to a quote by Martin Hollis that brings us back, once again, to early Enlightenment science:

¹⁴ These are ancient analogs of what we now call natural selection and sexual selection.

Descartes himself maintained that an atheist could not be a successful scientist, because scientific knowledge depended on understanding nature as the creation of a God who decreed the kind of order displayed in it. The image of the watch [the dominant metaphor for Creation during the Enlightenment] is nicely poised between the old [Scholastic view of the world] and the new [scientific one.]... A watch works by 'efficient causes' so as to serve its 'final cause,' the purpose for which the watchmaker made it. This duality made for peace between the new science and religion and remained part of scientific thinking for at least another century.

All the same the decisive break had been made. The more detailed and complete the explanation of how a machine works, the less it matters why it exists. Each state of a perfect clockwork is the effect of the previous state and the cause of the next, given causal laws of its operation which can be formulated without mentioning purposes. If nature is a perfect clockwork then it runs forever in this utterly predetermined way and science can forget that God no doubt created it and wound it up in the beginning. It is as if God had said 'I declare this universe open' and then left it to itself. Questions of *why* the world exists increasingly became separate from questions of *how* it works, until atheists were no longer at an intellectual disadvantage in science.... [my italics]

A sharp challenge to belief in human free will is looming. Descartes himself hoped to avoid it by treating the mind or soul as an immaterial substance separate from the material world and so not governed by natural law. The human body behaves mechanically; the mind remains free. But this famous dualism of mind and body was always precarious. Even if philosophically defensible, it is threatened as soon as the methods of natural science are turned on human nature. [Hollis (1994) 28-9]

Of course, this is exactly what has happened in the modern world: the powerful methods of natural science, so useful for explicating how watches work, *have* now been "turned on human nature." We have seen feedback systems at work in human physiology, and Darwin has given us the sense that evolution itself follows lawlike rules; from a certain perspective, every component of a human being, including her mind, is as a cog in a mechanism designed to perpetuate genes. And so, as Hollis says, Descartes' dualism is threatened. The *res cogitans* turns out to be a sprocket in the *res extensa*, and not autonomous after all, an idea we will turn to in detail in the next chapter.

This leads directly to Hollis's insight that the death of dualism also threatens the collapse of *why* into *how*. The *res cogitans* is the ship upon which meaning sails; upon sinking into the *res extensa*, it brings its captain, the question *why*, along for the ride. And so, as both Hollis and Burttt imply, just as atheism becomes possible when the universe becomes a clockwork, so too depersonalization of patients becomes possible when the human body becomes one of Dawkins' "lumbering robots." When God disappears from creation, the soul can disappear from the flesh, and with the disappearance comes the death of *why*.

Crucially, the death of *why* by feedback loop can occur only if final and efficient causality are seen as antagonistic. Only if they exist in a zero-sum world does it make sense to assume that the growth of one

implies the death of the other – an idea I will question in a moment. My purpose here is to show that the antagonism, real or not, is nevertheless *perceived* by a great many people.

One possible reason for this is that feedback loops fuse efficient causality with final causality, with the latter becoming synonymous with the former. To see this, realize that a feedback loop, being a *loop*, reveals present events to be inevitably linked both to the future and to the past. Thus, unlike narratives that proceed linearly, from past to future, feedback loops are not time-dependent. One may start one's analysis of a feedback loop at any point on the circuit. Once one enters the loop, it follows its natural course, and one hits every point in order before returning to the starting position. If we call the initial position the present, and feel that we are moving into the future, we find ourselves in a conundrum when, soon enough, we end up back at the present. Does this make the first present the past? If so, why is it identical to the present present? This sort of philosophical question greets all circular notions of time. The point, however, is that all of this time confusion can be easily enough resolved with Ockham's razor. Time seems to have little power in feedback loops, in the sense that they are timeless: it is the physical objects, connected to one another causally, that are carrying the story forward. This is certainly not the case were one to hold a non-looping, linear notion of time, in which the future is *never* the past, and in which telos can therefore *never* be conflated with efficient causality. In feedback loops, alternately, final and efficient causality fuse, time drops out, and the teleology, if it is to remain at all, must be transferred to matter. In feedback loops, the physical world embodies, literally, its own telos.

For now, the point is that a great many people somehow or other see the waxing of efficient causality – *how* – to imply a corresponding waning of final causality, *why*. And with the death of *why* goes all those phenomena, such as narrative and meaning, that depended upon it for their existence. Thus the more that allopathic medicine and its practitioners have learned two lessons:

1. *How* and *why* are antagonistic.
2. They exist in a zero-sum world.

the less likely they will be to pay attention to narrative when they feel they understand the mechanism, and the more likely they will be to pay attention to it when they are at a loss for how to treat patients. This is, to my mind, one fruitful way to understand the anecdote of the arthritic woman given in Chapter One. The patient's previous physicians, intent on treating disease, had never acknowledged the disease as "a thing

that mattered, a personal event.” Once treatment became impossible – as the doctor says, “I didn’t really have much else to offer” – an interest in the question *why* emerges, and the doctor makes a comment that causes the patient to cry, and then to discuss the rich world of meaning the question *how* had never seen.

Chance and Necessity

I want to mention a second belief that doctors use against *why*, that of chance and necessity.

Scientists must periodically explain phenomena that do not seem to result from causally determined laws – phenomena that do not fit neatly into feedback loops¹⁵ or other formulaic constructs. This usually spurs them to either discover a new lawlike process that does explain the aberrant phenomenon or to posit that the event is random.

The crucial point is that chance plays for science the role that purpose, or God’s will, plays for the devotee. But this has a second, and perhaps inadvertent consequence: the sick person’s efforts to make sense of her disease by incorporating it into her life story, and to thereby give it a purpose, is compromised if disease must be seen as the product of either chance or necessity. Thus to the extent that physicians, trained in the climate of hard science, find the notion of purpose irrelevant, they will, in their turn, create a climate that makes it difficult for patients to hold otherwise.

Chance

We have already examined the notion of necessity, which comes from efficient causality. The doctrine of chance, moreover, crops up incessantly in science. Quantum physics is notorious for this; Einstein is famous for being the exception proving this rule with his catchy protest that “God does not play dice.”¹⁶

¹⁵ Or feed-forward systems, the other major mechanism by which patterned behavior can occur without conscious oversight. [Guyton (1996) 8; Churchland (1996) 276]

¹⁶ For example, physicists are famous for their findings that were the electron to weigh a tiny bit more or less, atoms could not exist; were the universe to expand only a tiny bit more slowly, it would have long ago collapsed; if the electric charge of the electron had been any different, suns could not have existed, and so on and so forth.[Hawking (1988) 125] To explain how fluke upon fluke could have conspired to make the world, they offer the weak and strong “anthropic principles” which claim, more or less, that only such a series of flukes could have produced somebody capable of noticing them. Thus we should not be surprised, given that we exist and can notice things, that there was just such a series of flukes. Of course, this helps

More to our point, one of the central dogmas of modern evolutionary biology is that human beings are the products not of God but of chance plus necessity. A fine example of this comes from Steven Jay Gould, many of whose most famous ideas stem from his knack for showing apparently directed systems to be driven by random events.¹⁷

Take this quote from his most recent work, *Full House*, which argues that, contra Cope and the popular wisdom, evolution has no inherent directionality:

At any of a hundred thousand steps in the particular sequence that actually led to modern humans, a tiny and perfectly plausible variation would have produced a different outcome, making history cascade down another pathway that could never have led to *Homo sapiens*, or to any self-conscious creature.

If one small and odd lineage of fishes had not evolved fins capable of bearing weight on land (though evolved for different reasons in lakes and seas), terrestrial vertebrates would never have arisen. If a large extraterrestrial object – the ultimate random bolt from the blue – had not triggered the extinction of the dinosaurs 65 million years ago, mammals would still be small creatures, confined to the nooks and crannies of a dinosaur's world, and incapable of evolving the larger size that brains big enough for self-consciousness require. If a small and tenuous population of protohumans had not survived a hundred slings and arrows of outrageous fortune (and possible extinction) on the savannas of Africa, then *Homo sapiens* would never have emerged to spread throughout the globe. We are glorious accidents of an unpredictable process with no drive to complexity, not the expected results of evolutionary principles that yearn to produce a creature capable of understanding the mode of its own necessary construction. [Gould (1996) 216]

“Random,” “accidents,” “unpredictable,” “no drive”: Gould here attacks the notion that humans are on earth for a purpose. And note that the purpose he attacks is not religious purpose – he assumes his readers

those of us disinclined to assume these things are flukes, as opposed to intentional, very little. Some assistance comes from philosophers of science who, musing on quantum mechanics, propose a “Many Worlds” version of the Copenhagen interpretation. I know little about this theory, save that it posits that there are an infinite number of universes, ours being one of them. Ours also happens to be the one that is capable of producing me, which is why I know about it; because there are an infinite number (each branching off of one another at every possible quantum decision point) it really does make sense to see ours as a product of millions of flukes piled one on top of the other. Statistically, out of an infinite number of universes, one is bound to have that many flukes – which avoids, after all, the problem of God. [Gribben (1984) Chapter 11] Apparently this all follows from quantum mechanics and is the only viable alternative to the classic Copenhagen interpretation, and cannot be proven without time travel, so, in the end, becomes a matter of faith.

¹⁷ To name the few I know about: punctuated equilibrium is the result of random punctuations; the spandrels of San Marcos and many biological working parts are not adaptations but random exaptations; evolution has no inherent directionality, but given that there is a minimum size for the smallest cell, the only direction the normal curve can move over time is towards the right (towards larger size, complexity), this movement is, statistically speaking, random. A trend in his intellectual thought seems fairly obvious – he looks for randomness, and is quite gifted at finding it – there is good reason to suspect that he is correct about these three phenomena, as far as I can tell.

have dispensed with that notion – but evolutionary purpose. The evolution of man was not inevitable, was not even likely, and if we replayed evolution, things would be quite different.

We have strong reason to suspect that the loss of most [of the species that have existed over the world's history] and survival of just a few, occurred more through a distribution of lottery tickets than by victories for predictable cause based on higher levels of progress among winners. In the "pure" lottery model, "tickets" are distributed at random and few initial lineages receive such a blessing. Any replay distributes the tickets to another random set, and leads to a radically different group of survivors.... We must assume that most replays would not include the survival and flourishing of vertebrates. All of us – from sharks to rhinos to humans – would then have been excluded from the history of life. [Gould (1996) 215]

In the next section I will suggest that Gould has made a thought error; our point here is that people seeking to find a meaning and a purpose to their illness should find it difficult to garner support from physicians who, in keeping with the tenets of biology, insist on portraying the illness as chancy. As Kleinman notes, "In the authorized biomedical version, sickness has no meaning, purpose, or use. There is no point to it" [Kleinman (1996) 6-7]

As should now be clear, if physicians routinely think that an explanation of how something works implies that we no longer need to think about why it exists, and if they routinely portray disease as random or necessary, they make it difficult to explore the question *why*, because they make it impossible to conceive of any context, medical or otherwise, where teleology might hold. They suggest that the world of *why*, and all it leads to, may indeed be useless not just to the world of science, but to the world in general. Numerous modern materialists, such as Churchland, Gould and Dennet, make precisely this claim. As a variation on the old song might put it, "anything *why* can do *how* can do better." Small wonder, then, that those who believe passionately in the extrinsic meaning of creation (that is, meaning beyond what the individual may produce via existential considerations) find evolutionary arguments so alarming.

Possible Resolutions to the How-Why Split

It is worth noting that there are several compelling retorts to science's attacks on *why*. The first argues that science ought not forget that the question *why* was long ago put aside, and that it was never expected, by those who first did this, that it should ever come under attack. As such, feedback loops do not collapse final causality into efficient causality. The second argues that chance is a doctrine, not a fact. And the

third notes that the existence of matter poses just as serious a *why* question as does the existence of an unknown future, making the collapse of one into the other dubious.

The Historical Separation Between How and Why Precludes Collapse by Feedback Loop

Final and efficient causality are not antagonistic. Therefore the success of science at elucidating efficient causes does not have any direct implications for the world of final causality, which includes the world of *why*. Science's rejection of final causality is premised on a faulty assumption.

In support of this, note two things. First, Newton, in rejecting "hypothesis," by which he meant speculation on such things as *why* gravity exists, explicitly stated that he was putting the question aside, rather than dismissing it. He reserved it for the theologians and the metaphysicians. Thus the modern sense that the world is meaningless, epitomized in Dawkins' and Gould's work, would doubtless have struck him not just as wrong, but as illogical. To Newton, science was constitutionally incapable of passing judgment on such questions.

Second, on a more logical front, I think science must surely be missing something in its understanding of final causality. Bertrand Russell gives a fine example of this confusion: he seems to think of a final cause as nothing more than an efficient cause originating in the future and affecting the present, as compared with a "normal" efficient cause, which originates in the past.

"The 'final cause' of an occurrence is an event in the future for the sake of which the occurrence takes place. In human affairs, this conception is applicable. Why does the baker make bread? Because people will be hungry. Why are railways built? Because people will wish to travel. In such cases, things are explained by the purpose they serve. When we ask *why* concerning an event, we may mean either of two things. We may mean: "what purpose did this event serve?" or we may mean: "what earlier circumstance caused this event?" The answer to the former question is a teleological explanation, or an explanation by final causes; the answer to the latter question is a mechanistic explanation. I do not see how it could have been known in advance which of these two questions science ought to ask, or whether it ought to ask both. But experience has shown that the mechanistic question leads to scientific knowledge, while the teleological question does not. The atomists asked the mechanistic question, and gave a mechanistic answer. Their successors, until the Renaissance, were more interested in the teleological question, and thus led science up a blind alley." [Russell (1945) 67]

It seems to me that Russell is making two thought error here. First, he feels that science has discovered something that is, in fact, a product of human definition. "Experience has shown that the mechanistic question leads to scientific knowledge, while the teleological question does not." But this is faulty

reasoning. As Kuhn and others have convincingly argued, what counts as scientific knowledge is determined by scientists, not by the natural world. The only reason that mechanistic questions yield scientific knowledge is because this is how everyone from Bacon to Newton defined scientific knowledge. Upon this error Russell builds his claim that teleology has been rejected for objective reasons: "I do not see how it could have been known in advance which of these two questions science ought to ask." Of course, this again is incorrect. Not only could it have been known in advance, but it was. Science was defined, from the get-go, as a mechanism-seeking discipline.

Russell's second mistake compounds the first, and is the one I am most interested in. He sees efficient and final causality as competing to explain the mechanisms by which phenomena occur. But again, this strikes me as unfaithful, if not to the letter then to the spirit of final causality. Russell is correct in saying that final causality, *in part*, claims that future events cause present events, and as far as we know this is wrong.¹⁸ But the *why* aspect of final causality, which Newton explicitly defined as being outside the purview of science, is not damned by its failure to proffer mechanism, because this was never its goal. Thus to construct a perfect description of the purposeless feedback loops of which a human is composed is not, in any way, to say that human beings have no purpose.

Although Russell has simply forgotten the definitional aspect of final causality, had he recalled it he might simply have chopped it off with Ockham's razor, asserting that true or not, it was not necessary to a proper understanding of the world. The problem here is that science has not yet offered a logical defense for the razor.¹⁹

The Doctrine of Chance is a Doctrine, not a Fact

¹⁸ There is some reason to think that it is no less wrong than the idea that the past causes events. Ever since Hume science has tried to understand whether causality is anything more than 'constant conjunction,' and it isn't clear to me that it is. Moreover, in the world of physics time is often treated as a continuum like space, with the present (say, the behavior of a tennis ball in flight) equally predictable from a knowledge of its starting or its ending position and trajectory. If everything is determined, then the future is just as determined as the present; history is a tapestry, already woven, that we, through a fluke of our neurological structure, we can look at only through a pinhole, and moving in only one direction. We should not confuse our direction of movement – past towards future – for the "truth" about time or causality. Indeed, there are some who think that if the universe collapses, time will reverse, and everything that has happened will occur again, but backwards, in which case everything that today we call an effect will instead become a cause.

¹⁹ It seems likely that the preference for simplicity stems from the mathematical bent of science; in math the shorter the equation or proof the better.

Recall from above Steven Jay Gould's remarks about chance.

At any of a hundred thousand steps in the particular sequence that actually led to modern humans, a tiny and perfectly plausible variation would have produced a different outcome, making history cascade down another pathway that could never have led to *Homo sapiens*, or to any self-conscious creature.

If one small and odd lineage of fishes had not evolved fins capable of bearing weight on land (though evolved for different reasons in lakes and seas), terrestrial vertebrates would never have arisen. If a large extraterrestrial object – the ultimate random bold from the blue – had not triggered the extinction of the dinosaurs 65 million years ago, mammals would still be small creatures, confined to the nooks and crannies of a dinosaur's world, and incapable of evolving the larger size that brains big enough for self-consciousness require. If a small and tenuous population of protohumans had not survived a hundred slings and arrows of outrageous fortune (and possible extinction) on the savannas of Africa, then *Homo sapiens* would never have emerged to spread throughout the globe. We are glorious accidents of an unpredicable process with no drive to complexity, not the expected results of evolutionary principles that yearn to produce a creature capable of understanding the mode of its own necessary construction. [Gould (1996) 216]

Regardless of one's take on evolution, must we not admit that Gould here also commits a thought error? He constructs a hypothetical scenario, conflates it with reality, debunks the scenario, and then makes a pronouncement about reality – an illegitimate string of reasoning. The hypothetical scenario is that *if* we replayed the history of the world we almost certainly wouldn't again get vertebrates, let alone human beings. Gould then confuses this hypothetical for fact. He assumes that replays are possible. But what if the universe has only happened once? Would this not dispense with the "fluke" argument, which relies upon the notion of probability, which in turn demands multiple replays? Indeed, if there has been only one universe, all of Gould's improbabilities suddenly start looking very much like "on-purposes" - the very things that religious folks have long taken them to be. However, Gould is not in a position to determine whether or not the universe has been, or could be, replayed.

The Physical World Is No More Stable than the Metaphysical World

A third attack on the *how-why* split takes the opposite approach from those mentioned above. It shows that science itself appears on the verge not of destroying the world of *why*, but rather on fusing with it. After all, the effort to collapse *why* into *how* (via feedback loop or chance) is premised on the belief that *how* is stable. Thus if we can show it to be as slippery as the world of *why*, it will be harder to justify its ontological priority. One way to see this is to examine a remark by David Chalmers, a mind-brain dualist

who believes that studies of the brain will not shed light on the nature of conscious experience, and who “propose[s] that conscious experience be considered a fundamental feature, irreducible to anything more basic.” [Chalmers (1997) 35] The curious remark is this:

I find it useful to distinguish between the “easy problems” and the “hard problems” of consciousness. The easy problems are by no means trivial – they are actually as challenging as most in psychology and biology – but it is with the hard problems that the central mystery lies. The easy problems of consciousness... concern the objective mechanisms of the cognitive system. Consequently, we have every reason to expect that continued work in cognitive psychology and neuroscience will answer them. The hard problem, in contrast, is the question of how physical processes in the brain give rise to subjective experience. [Chalmers (1997) 32]

Chalmers is a dualist because he separates the brain from the mind, asks how the former produces the latter, and then says that it probably doesn't (a third and more fundamental thing, information, underlies both). But like the monists against whom he argues, he seems to take the physical world as a given: it produces “easy problems” that humans will eventually solve. But why is there a physical world? Though the internal relations of physical matter may one day be worked out by science, this intellectual success should not be conflated with knowledge about why matter exists to begin with. This mystery is, to my mind, equally as pressing as the one with which Chalmers grapples – why is there consciousness to begin with? Once this point is made, the “easy problems” themselves become “hard,” and the physical world seems to lose its ontological priority. Chalmers himself seems to think this, arguing that a third entity, information, produces matter and mind simultaneously. But whence the information? The point is that there is an unanswerable *why* question lurking beneath any unmoved mover science can propose; efforts to collapse any one thing into any other thing are insensible as ontological statements if neither can be shown to be an unmoved mover. When collapsing one class of phenomena into another, we are making an aesthetic choice, not discovering a fact of the universe.

Conclusion

It is often said that “medicine is an art as well as a science.” But the profession's internal momentum daily removes more and more of the former and replaces it with the latter. Science is replacing art in medical practice, and so it is not surprising that it should adopt, with ever increasing confidence, the metaphysical trappings of scientific thought.

As this chapter has sought to demonstrate, modern scientific thought, following in the footsteps of Boyle and his contemporaries, has rejected – to the point of almost forgetting – the question *why*? For most scientists, most of the time, the question at hand, the question they are paid to answer, and the question that will win them fame, is the question *how*? The world has proven susceptible to mathematical, empirical, mechanistic explanation. It has become, to many scientific minds, the clockwork universe first intuited by Galileo and Descartes. God has vacated the future, and lodged himself in the past, disappearing concomitantly with the onset of the Big Bang. And with God has gone telos, and with the death of teleology has gone extrinsic meaning. And with the death of extrinsic meaning has come the inordinate pressure placed on the modern soul to construct from scratch a personal narrative – a personal narrative to serve the same psychological functions for him as religious cosmologies served for his ancestors.

Ironic, then, is medicine's growing inability to acknowledge the existence of personal narrative. For as I have tried to show, the shining methodological prize of enlightenment science, positivism, is the sworn enemy of teleological thought. And teleological thought is the mode of thought best adapted to constructing narratives. Thus as positivism the methodology daily transmogrifies into positivism the ontology, medical patients slowly lose their chances of having their life stories acknowledged in a systematic way by their physicians. Simply put, their physicians have lost the metaphysical backing needed to justify the time required to explore the meaning of illness with their patients.

So what has medicine lost? And what have patients lost? To be sure, they have lost the human connection that comes from exploring the meaning of illness, that comes from regarding a disease like rheumatoid arthritis as “a thing that mattered” and “a personal event.” But they have lost as well the a useful integrative tool. Teleology, with its grandiose, and sometimes frantic efforts to make sense of reality, casts a wide net. The patient who constructs a story around his illness is the patient who offers his physician symptoms that might otherwise be missed, and who simultaneously sheds light on his motivations for complying with, or not complying with, his treatment regimen. As Popper knew, conjecture is vital to science. The question is whether the patient's conjectures are as valuable as the physician's.

Chapter 3: Subjectivity and Objectivity

A man enters a doctor's office with a stomach pain, and he leaves with an ulcer: this is a medical success. A man enters a doctor's office with a stomach pain, and leaves with a stomach pain: this is a medical failure. The difference hinges on the physician's ability to convert the patient's subjective experience into an objective finding.

Patients go to doctors in order to bring about a change in their subjective experience. Although it is possible that the physician will do this directly, through an intersubjective exchange, most patients expect that the physician will first connect their subjective experience to an objective correlate(s)— a joint pain to an inflammatory condition, perhaps – and will then, by manipulating the objective correlate(s), bring about a change in their subjective experience.¹

Because of this expectation, medical science has brought a great deal of attention to bear on what were once assumed to be inviolably subjective experiences. This effort has borne fruit. Many such experiences are now routinely discussed in terms of their objective correlates. Depression can now be thought of as a serotonin deficit; hyperactivity as a Ritalin deficit; lust as a testosterone surge; pain as the firing of c-fibers.² The progress of scientific knowledge on this front is stunning. It brings with it, however, some

¹ A hierarchy is implicit in the physician's efforts along these lines. In descending order of optimality:

1. Cure the patient: correlate objective findings to subjective, construct an diagnosis, administer a treatment that alters the objective correlates, and effect a cure which is experienced physically as a shift in the objective correlates and subjectively as an improvement in conscious experience.
2. Cure the patient without objective correlates: Treatment is based on the patient's description of their condition, without correlation occurring. For example, patients with headaches are prescribed aspirin. This is regarded as a less ideal cure than #1.
3. Diagnose the patient: As in #1 above, but it is not possible to alter the objective correlates, and cure is therefore impossible. For example, disseminated pancreatic cancer can be diagnosed but not cured.
4. Fail the patient: The subjective experience cannot be correlated with an objective findings, and thus remains mysterious.

² For example, a short-story in Harper's Magazine [April, 1998 pp 4-5] concerning a self-pitying, obsessive "depressed" person drew angry letters from readers, including these, both from lay readers: "although persons such as his protagonist exist, Wallace cunningly pretends to confuse his pathetic wallower with someone stricken with clinical depression, which, *as everyone knows by now, is an involuntary disease driven by biology, not choice.*" [Italics mine] and, from a second reader, "I read 'The Depressed Person' in disbelief, horror, and anger. I reread it three times, hoping to find some kernal of understanding, some thread of compassion. I found neither. *Clinical depression is a monstrous illness. It is caused by an inherited error in brain chemistry. The illness, in many ways, most resembles diabetes – there is a genetic*

metaphysical and practical baggage. Metaphysically, it taps into ancient questions about the relationship of subjectivity to objectivity. Are they truly distinct? Does one cause the other? And practically, the process may leave some sensitive patients feeling ignored. Because physicians are habituated to using subjective experience as a means to an end, they may fail to value it for its own sake. Because patients experience their subjectivity as an end as well as a means, some interpret the physician's conversionary fervor for a disinterest in their essential self.

This chapter seeks to explore these ideas more fully. It will begin with an attempt to define what is meant by "subjective" and "objective." It will then explore the doctor's drive to convert the former to the latter, arguing that the drive is implicit in the structure of a medical encounter. Along the way, I will suggest that doctors' efforts are in keeping with trends in the history of western science, and will examine some critiques of these trends. Finally, I will close with some reflections on the effect conversion has on the patient.

Definition of Subjectivity and Objectivity

It is not at all clear that there is a sharp division between subjectivity and objectivity; nevertheless, when we use these terms, we seem to imply one. What might we mean?

Difficult to define precisely, subjectivity seems to have two important characteristics. The first is that it is private; as B.F. Skinner noted, the essential defect of behaviorism is that it cannot solve "the problem of privacy." [Lyons (1995) liii] Indeed, some philosophers believe that the problem cannot be solved, because the privacy of consciousness is a bedrock fact of the universe. [Searle (1995)] Others disagree. [Churchland (1995)] For practical purposes, however, whenever an experience defies communication – when a patient can describe it, but cannot share it – we often describe it as subjective. We may simply mean that it is private.

The second characteristic of subjectivity is that it has no location in space. When a patient has a subjective experience – pain in her joints, perhaps – where is it? In the joint? In her head? In her nerves? Unlike the joint itself, which can be easily mapped onto a Cartesian coordinate system, the felt

marker and medication is helpful." [Italics mine]. In short, many in the American public now think of depression as a biologically driven, genetically determined illness.

sensation of joint pain is hard to locate precisely. [Wilber (1995) Burt (1952)]³ The problem becomes even more apparent with a subjective experience such as happiness. Such general emotions are not circumscribed, tucked away in a corner of consciousness. Rather, they permeate the entire field, coexisting with and infecting other experiences.

Objectivity, alternately, seems to refer to phenomena that are public, at least in principle, and to have precise location in space. [Wilber (1995)] When physicians say that something is objective, what they often mean is that multiple observers, using their senses and/or third-party recording devices, might all describe the object in precisely the same way – all radiologists might agree that an immunoassay reveals rheumatoid factor. Moreover, objective phenomena can be described spatially, which is to say, mathematically. If this latter ideal is not met, mathematical description – quantification – is accepted as a weak substitute. Hence a count of the number of T-cells in a joint is more objective than a count of the number of patients who complain of joint pain, which, being mathematical, is considered more objective than the statement “rheumatoid arthritis isn’t nice,” which most would term a subjective statement.

These cursory definitions avoid the early Enlightenment understanding of “objectivity” as referring to things that can be observed neutrally without being interpreted. [Hollis (1996) Kandell (1995) Burt (1952)] As the Gestalt psychologists first showed, as deconstructionists never tire of noting, and as the contemporary neurobiologist Eric Kandel observes, human beings interpret everything.

The degree to which visual perception is transformational and therefore creative has been fully appreciated only recently.... The modern cognitive view [is] that perception is an active and creative process. [Kandell (1995) 388]

In summary, then, to say that a phenomenon⁴ is objective is not to say that it is uninterpreted; rather it is to say that multiple subjects might produce “identical” interpretations of it, and give identical descriptions of its location. Importantly, the emphasis is on description, not experience; by definition, we cannot say that something is objective if it provokes identical subjective experiences, because we have no means of directly comparing one subjective experience to another (as they are private). Identity is established via rules that confirm that each subject is describing their interpretation and the location in the same way. It is

³ The assertion that the subjective sensation is where we feel it to be is usually rebutted (perhaps illegitimately) by noting “phantom limb” syndrome. The assertion that it is in the brain seems theoretically sound, to a degree, but experientially blind. Regardless of one’s opinion, it is worth noting that reasonable people might disagree about where subjective experience is located.

the creation of such rules that preoccupies many philosophers of science. [Popper (1953/1988) Carnap (1966/1988), Giere (1984/1988)] Whenever such rules are absent, the ability to confirm consistency across subjects is questioned, and this contributes to the problem of privacy.

One of the oldest pastimes in philosophy is to wonder about the connection between “objective” phenomena and “subjective” phenomena. After all, certain classes of phenomena prove amenable, time and again, to objective handling: physical matter is one such class. Certain other classes, such as moral phenomena, prove resistant. Whether these classes are determined by the properties of their constituents, or whether the constituents are products of the class definitions is debated keenly. But assuming the former, what is the connection, if any, between these classes? Descartes was famous for arguing, implicitly, that subjective and objective experience, to which he applied the terms *res cogitans* and *res extensa*, were correlated with one another, but were not causally connected. This came to be known as the “two clocks” hypothesis [Russell (1954)], with the analogy being to two autonomous but synchronized clocks, one of which strikes twelve and the other of which simultaneously releases a cuckoo. Some modern thinkers perpetuate this dualist legacy⁵; others gravitate toward its “rival,” monism, which has two branches, materialism and idealism, which hold alternately that the subjective world is a byproduct of the objective, and vice versa. And some thinkers profess agnosticism plus pragmatism, suggesting that it would seem that those who manipulate the objective world in an effort to alter the subjective meet frequently with success, and that for this reason they ought continue with their efforts. This positivist position suggests that we behave “as if” materialism were true, while reserving ontological pronouncements on the subject. [Hollis (1996)].

In all the confusion over the relationship of subjectivity to objectivity, the incalculable importance of subjectivity, regardless of its origins, can get lost. People experience themselves as subjects. To “ignore” subjectivity, then, is to ignore the self.

⁴ Indeed, even the word phenomenon assumes that the thing itself is interpreted; the thing itself is termed the noumenon, according to Kant’s terminology.

⁵ Or variations upon it; David Chalmers, for example, believes that a third phenomenon, information, gives rise simultaneously to physical matter and conscious experience, or what we might term the objective and subjective worlds. Whether “information” plays a significantly different role in Chalmers’ view than God did in Descartes’s is unclear.

In this chapter I will suggest that when patients complain about physician impersonality they are, in part, complaining that their doctor is behaving as a materialist, and is thereby ignoring their self. My argument has several components:

1. Doctors seek to correlate objective signs (a term I will stretch beyond its common usage to include all diagnostic test results, including X-rays, lab findings, and the like) with subjective symptoms.
2. Once the correlation is complete, doctors prefer to handle the symptoms indirectly, by manipulating the signs directly. As a result, they may discuss the patient's disease "impersonally," which is to say, indirectly.
3. Further, many doctors do not routinely honor the boundary between symptom and sign; when possible, they seek to reconceive symptoms as signs. As a result, the subjective world of the patient may appear to disappear.
4. This process, of first dividing objective from subjective, and of then reconceiving the latter as the former, is the essence of materialism. It has historical roots in the early Enlightenment. It is currently regarded as both practical, and intellectually defensible, by many people.
5. Patients generally expect their physicians to engage in this process; occasionally, however, it serves as the basis for profoundly alienating exchanges that can result in the charge of impersonality.

Doctors seek to correlate signs and symptoms, and prefer signs to symptoms

Doctors are fascinated by subjective experience because they are eager to supplant it with objective fact. Just as Michaelangelo prefers The David to a block of stone, but must begin with the marble in order to make the man, so too the doctor prefers the objective to the subjective, but in order to reach a diagnosis and effect a cure, must start with the words the patient speaks. This can best be seen by examining an ideal-typical visit to the physician.

A doctor-patient encounter is divided into two sections: the history-taking and the physical exam. In the former, doctor and patient sit facing one another, and they talk about the patient's problems. The patient is, ostensibly, the arbiter of truth during this period. In the latter section, talking, for the most part, ceases. The patient removes his clothing, and the doctor examines him physically; for the sake of convenience, all

laboratory or diagnostic procedures – blood tests, CT scans, and the like – can be considered elements of the physical exam. The physician is the arbiter of truth during this period.

A second distinction is used throughout the doctor-patient visit – that between symptom and sign. Symptoms are what a patient describes of a disease, and signs are what a doctor sees. Thus a symptom of rheumatoid arthritis is “my joints ache,” while a sign is “the patient’s knuckles appear swollen and malformed.” Symptoms and signs can refer to the same phenomenon, but symptoms are the subjective component, while signs are the objective component. Importantly, symptoms *may* include things that the patient feels are significant (“I wasn’t wearing my lucky shirt when it happened”) which the doctor feels are not. Taken as a group, symptoms tell the patient’s story about what is wrong with him. Signs, alternately, are an observer’s story about what is wrong. And being objective, they are potentially apparent to any observer who knows enough to notice them.⁶

These two dichotomies map onto one another fairly neatly. In general, the doctor looks for symptoms during the history-taking phase, and looks for signs during the physical exam.

Figure 1: History and Physical

<i>History-Taking</i>	<i>Physical Examination (+ diagnostic tests)</i>
Patient talks about his <i>symptoms</i> , his internal experience of his problems. The patient is the arbiter of truth; the doctor listens neutrally.	Doctor looks for <i>signs</i> , the observable manifestations of the patient’s problems. The doctor is the arbiter of truth; the patient is examined passively.

Note that because subjectivity is private, as defined above, the patient is necessarily the arbiter of truth when it comes to describing symptoms. During the physical exam, it is the doctor who becomes the arbiter of truth, although in principle anyone with appropriate knowledge may adjudicate objective truth claims.

Now what is the relationship between symptom and sign? To the degree possible, *the doctor seeks to correlate symptoms with signs*. That is, the doctor is happiest when she can find a sign for every symptom the patient has described. In doing so, the physician taps into the ancient Cartesian effort to find correlations between the subjective and objective world, without necessarily passing judgment on which

⁶ Throughout this chapter I will use the word “sign” to denote any phenomenon that an observer might notice. Thus I will consider the results of lab tests to be signs, even though this is a technical misuse of the term “sign.”

has primacy. Further, once this correlation is complete, the physician preferentially handles the sign. Two opposing scenarios help illustrate this point.

Two Scenarios Illustrating the Physician's Efforts to Correlate Symptom with Sign

Imagine a patient who enters a doctor's office and says "I am terribly short of breath." He is reporting a symptom. After taking his history, the doctor will move to the physical exam, and look for signs of this problem. Now let us imagine two opposing scenarios.

In the first, every test is "positive." The patient is breathing rapidly and shallowly, with a wheezing and congested sound in his lungs; his heart is beating weakly and irregularly. In the second, every test is "negative." The patient shows no overt signs of breathing difficulty at all – he breathes deeply, has clear lungs and a steady pulse. Now imagine what the doctor thinks in these two scenarios. In the first, she thinks to herself "no wonder this patient is short of breath!" but in the second she is confused: "everything seems to be working fine. Why does he feel short of breath?"

What do these two scenarios show us? To begin with, we see that the physical exam seems designed to attach signs to symptoms, a process we might call "correlation." Second, we see that the doctor gives subjective experience more weight when objective fact supports it, and less weight when objective fact contradicts it. In the first scenario, the patient's complaint seems valid. He feels short of breath because he's having trouble breathing. Sign validates symptom; doctor and patient agree. In the second, the complaint seems dubious. He isn't having trouble breathing, so why should he feel short of breath? Symptom and sign are at odds; doctor and patient disagree.

If subjectivity had the power to modify the doctor's valuation of objective findings to the same degree that objective findings have the power to modify the doctor's valuation of subjective symptoms, then we would say that in the world of medicine subjectivity and objectivity produce two *parallel* lines of evidence, neither of which is given superior ontological standing, in keeping with Cartesian dualism. However, this is not the case: subjectivity is subservient to objectivity, with no *vice versa*, and this gives us our first indication that physicians are encouraged to be materialist monists, rather than dualists. This can be seen by continuing to examine our short-of-breath patient.

Imagine the second scenario again – the one in which tests fail to reveal even a single sign that confirms the symptom “I am terribly short of breath.” Every conceivable test comes up negative. The patient’s muscles and organs are receiving enough oxygen, his carbon dioxide levels are normal, his heart is normal, his lungs are normal, his throat is unblocked, he is not hyperventilating, and he shows none of the cognitive deficits usually associated with hypoxia. Does the physician hospitalize the patient in this case? No. She *reassures* him. She says “well, you may feel short of breath, but your breathing is fine. You are in good health.” She may then go on to offer a hypothesis: “The problem is probably in your head. You’re probably just anxious; once you relax, your shortness of breath will go away.”

In contrast, however, imagine the first scenario with an improbable twist. Imagine a patient who shows every conceivable sign of shortness of breath but insists that he is fine. His breathing is rapid and shallow, his lungs are clogged with thick mucus, his windpipe is constricted and swollen from an asthma attack, his heart is beating weakly and irregularly, his blood oxygen levels are low, his carbon dioxide levels are high, and he is blue in the face. Yet he insists that he feels fine, and angrily rejects efforts to treat him. Does the physician hospitalize the patient in this case? Yes. Unless immediate steps are taken, the patient will die. His conviction that he is fine is hardly evidence against this. Indeed, it may indicate that his blood oxygen is so low that his brain cannot function properly; he may be, in medical parlance, delirious.

The point is that in both scenarios, signs trump symptoms. Objectivity trumps subjectivity. The doctor, when pushed, believes what she sees, not what the patient feels. The reason for this is fairly straightforward. Physicians are paid to trust their interpretation of disease over the patient’s. For this reason, unlike other professionals a patient might consult about unpleasant subjective experience – a priest, or a social worker, perhaps – the physician is trained to examine the physical body in preparation for manipulating it. Thus in preferring signs to symptoms when correlation is impossible, the physician is merely doing her job.⁷

Doctors seek to convert symptoms into signs

Few physicians are content to merely prefer signs to symptoms when they disagree – that is to say, few physicians are content with Cartesian dualism in which the *res extensa* is preferred, and the *res cogitans*

ignored.⁸ Rather, having ruled out all other possible medical explanations of the symptom, doctors may come to believe that recalcitrant subjective experience are themselves signs. As I will suggest shortly, this has important implications for the patient, whose right to serve as an arbiter of truth is in this way undermined.

This can be seen by considering the doctors' claims, in the scenarios above, that the first patient was short of breath *because* he was anxious, and that the second patient rejected medical treatment *because* he was delirious.

Such claims posit a causal connection between objective reality and subjective experience. Here, the symptom ("I feel short of breath" or "I don't need any medical help") is a product of a sign ("patient is anxious," or "patient is delirious"). And this is a monist, materialist claim, because correlation has given way to causality. The sign is causing the symptom. Here the doctor doesn't merely disagree with the patient while respecting his right to disagree; she actually co-opts the patient's experience, reinterprets it, and explains it away. She says "you think you're short of breath but aren't *because* you are anxious and anxiety provokes a sensation of breathlessness."

Such thinking paves the way for physicians to ignore their patients' selves, which will become more clear when we discuss monism directly. For now, the point is that once the subjective experience becomes the basis for a diagnosis that rejects it as a truth claim, the subjective quality *qua* subjective quality disappears in the physician's mind. The doctor doesn't believe that the patient has a breathing problem, but she does believe that the patient *thinks* he does. She then takes the next step and says "therefore he is anxious." This is a significant line of reasoning, because in order to say "the patient's false belief is the basis upon which my diagnosis rests" the physician must erase the distinction between symptom and sign discussed earlier. She must take the symptom to be a sign, thereby revoking the patient's right to serve as an arbiter of truth. As it turns out, when patients complain about physician impersonality, they are in some ways complaining that their physician has denied them this important power.

⁷ Note that for the time being we are avoiding the issue of how doctors know when a correlation between symptom and sign is a good one. This is an issue of great interest to philosophers.

⁸ Note that I am assuming the physician has pursued every possible physical explanation for the symptom, in an effort to uncover separate disease processes.

In summary, we have presented two arguments concerning the relationship of objectivity to subjectivity in a medical encounter. I will call these arguments “weak objectivity” and “strong objectivity.” The weak position is this:

Sometimes doctors must choose between two conflicting pieces of information. If one is a symptom, and the other is a sign, the doctor is professionally licensed to choose the sign.

This argument is weak because it is a dualist argument, accepting as a given that symptoms and signs are two different things, from two different worlds. Symptoms are from the internal world of subjectivity, and signs are from the external world of objectivity. While it prefers objectivity to subjectivity, it still believes that subjectivity is autonomous. The strong objectivity position does not. It says:

Signs and symptoms are never really in disagreement with one another. It is only because medical understanding is limited that we sometimes think they are. In the future, things we now call symptoms will themselves be seen as signs. Every subjective symptom will someday be explicable in terms of objective signs.

This argument is strong because it is materialist, arguing that subjective experience arises out of objective reality. It implicitly argues that someday objectivity will be all that medicine needs in order to diagnose and cure patients – which is to say, in order to alter their subjective experience. In the end, every truth may be seen by an observer, and none need be private.⁹ As such, subject-subject interactions will not, in principle, need to occur, as they do at present during the symptom-gathering history. This should be a familiar argument to most observers of modern medicine, because it is made implicitly by most psychoactive medications; in the world of biological psychiatry, object-subject interactions are slowly replacing subject-subject ones.

⁹ I should note that there is one permutation that I have not addressed. Can we not attack the idea that medicine prefers objectivity to subjectivity by noting that, currently, many diagnoses are based *only* on symptoms? Viral colds, stomach aches, and headaches are often diagnosed solely on the basis of what a patient reports. Moreover, many diseases lack biological markers or definitive lab tests, and are diagnosed “clinically.” Lupus and schizophrenia are good examples of these. Further, it is a truism in medicine that “a good history gives you the diagnosis most of the time.” This general line of reasoning could be elaborated upon; its thrust is that much medicine is done in the absence of definitive signs. Could this, then, not be a good basis for rejecting my claim that medicine prefers objectivity to subjectivity? I will say only that this is real, but it is not, to the medical mind, ideal. Given the chance to use a simple objective test to confirm schizophrenia, lupus, a headache, and the like, most doctors would take it. A diagnosis based on signs and symptoms is trusted more, in general, than one based on symptoms alone. And, as this chapter is arguing, a diagnosis based solely on signs is trusted most of all.

This Process has Historical Roots

It should come as no surprise that physicians endorse such a position, since western science has been gradually creeping towards monism ever since Descartes first proposed dualism. The dichotomies we have been discussing – symptom and sign, subjective and objective, history and physical – are agents in this ongoing philosophical movement. For this reason, a brief discussion of the history of dualism and monism is, for this reason, in order.

As discussed in Chapter 2, for the Scholastic, the world was of a piece. There was not today's clear distinction between subjectivity and objectivity. [Hollis (1996), Burt (1954), Russell (1945)] Rather, objective events were interpreted unselfconsciously through a subjective lens – a lens that assumed that the world could and should make sense to the human mind, *because* God had created it to be the medium through which man might know him. As such, as E.A. Burtt has noted, there was no problem of epistemology for the Scholastic. [Burtt (1952)] And the question of whether sign trumps symptom is nothing if not a question of epistemology.

Similarly, for the patient entering the doctor's office, their self is of a piece; they are an individual. Patients do not divide themselves into subjective and objective components; rather, they experience themselves subjectively, recognizing that some aspects of themselves – what they look like, for example – are accessible to others, while others – their felt-sense of their internal state, perhaps – are not.

The early giants of modern science, notably Galileo, Descartes, and Newton, destroyed the Scholastic world when they created what we today call "Cartesian Dualism." They did this by reviving an ancient Greek distinction between "primary qualities" and "secondary qualities."

Primary qualities are those things in the world amenable to mathematical handling. Secondary qualities are everything else. [Burtt (1954) 118,121,236] Thus spatial location is a primary quality, because a Cartesian coordinate system can be used to map it. Movement in space is a primary quality, because calculus can be used to model it. Everything we can sense through vision, hearing, touch, smell, and taste has a primary quality, because, according to modern science, light and sound are composed of measurable waves which produce physical effects, and smell, touch and taste are all effected via the interaction of molecules and receptors, which can be mathematically described. Further, all events in the brain are potentially mathematically mappable, because they involve the interaction of atoms.

Secondary qualities are everything that is left over once we have removed primary qualities from the world. They are those qualities that are, in the language of math, unspeakable; they lack what we might call “math handles” – qualities or characteristics that make a mathematical handling possible. Thus they are metaphysical and lacking precise location. Love, morality, and aesthetic principles are all secondary qualities for precisely this reason.

Kepler, Galileo, Descartes and Newton all subscribed to this dichotomy, and it has survived up until the present.¹⁰ [Burt (1952)] It is, moreover, at the heart of Descartes’ famous dualism. He mystified and mythologized it, and turned it into two “substances.” He relegated primary qualities to the physical (extended)¹¹ substance, called the *res extensa*, but ascribed secondary qualities to a second “thinking” substance, called the *res cogitans*. To the modern mind, it is known as the distinction between objectivity and subjectivity. But these are all the same thing, in so many words. Primary qualities are the *res extensa*, and are what we refer to when we talk about the objective world. Secondary qualities are the *res cogitans*, and are what we refer to when we talk about the subjective world. The splitting of the mind from the brain is in keeping with these distinctions.

For early Enlightenment science, and until the present, the relationship between primary and secondary qualities has been an enormous mystery for those willing to parse the world in this way. While everyone since Descartes has agreed that they appear to be correlated with one another (for example, a real apple, in the *res extensa*, produced an image somehow in the *res cogitans* of Newton), the precise nature of that correlation has been a primary focus of everyone from Kant to James to modern neurobiologists, philosophers, and cognitive scientists such as Kandel, Dennet, Churchland and Searle. Is the correlation

¹⁰ *Burt on Kepler*: “[For Kepler]the real world is a world of quantitative characteristics only; its differences are differences of number alone. In his mathematical remains there is a brief criticism of Aristotle’s treatments of the sciences, in which he declares that the fundamental difference between the Greek philosopher and himself was that the former traced things ultimately to qualitative, and hence irreducible distinctions, and was, therefore, led to give mathematics an intermediate place in dignity and reality between sensible things and the supreme theological or metaphysical ideas; whereas he had found means for discovering quantitative proportions between all things, and therefore gave mathematics the pre-eminence. “Wherever there are qualities, there are likewise quantities, but not always *vice versa*.”[Burt (1954) 67]

Burt on Galileo: “Galileo makes the clear distinction between that in the world which is absolute, objective, immutable, and mathematical; and that which is relative, subjective, fluctuating, and sensible. The former is the realm of knowledge, divine and human; the latter is the realm of opinion and illusion.”[Burt (1954) 83]

¹¹ “Extended” means simply that the object is extended in space; it extends, it takes up space, it has length and breadth and height; it has location. Love is a classic example of something that appears to have no extension. Thus whether or not something is extended is a good way of separating primary from secondary qualities.

due to causality? If so, is the secondary quality causing the primary (idealism) or the primary causing the secondary (materialism)? Or is a third agent causing both simultaneously, as suggested by David Chalmers. These intriguing questions aside, the correlation itself seems generally accepted, and has allowed people to preferentially focus on one half of the dichotomy, confident that the other would come along in tow. Thus we can manipulate the *res extensa*, perhaps by getting alcohol into our brains, confident that a change in our *res cogitans* will soon ensue, whether or not we are idealists, materialists, or agnostics.¹²

Similarly, doctors divide patients into signs and symptoms, in the manner discussed above. The signs, possessing “math handles” as they do, are amenable to medical manipulation. And correlated as they are with symptoms, the associated symptoms frequently are changed as a result.

Beneath the surface of Cartesian dualism has lurked, always, monism. On the surface, dualism does not argue that secondary qualities are unreal; it only contends that they are not useful to science, because, lacking math handles, they are not easily controlled. However, beneath the surface, science is engaged in a long term effort to reinterpret secondary qualities into mathematical or potentially mathematical language, and thereby to import them into the primary world. This is one of the implicit lessons of Burt's book. Though it is difficult for a modern trained in the hard sciences to imagine, the words “force,” “mass,” “density,” “weight,” “gravity,” “suction,” “space,” “time,” “inertia,” “velocity,” “period” and “acceleration” were, three hundred years ago, used by scientists but lacked mathematical content. That is, scientists might talk about “force,” but lacking our modern notion of $F=ma$, used it to describe “the force of a hammer on a nail” and “the force of Newton's argument” without a shift in semantics. Each of these terms has its own storied history, as outlined by Burt; the general point is that each of them was once a secondary quality, but is now a primary quality. [Burt (1952) 164, 176, 177, 212, 222, 240-2] It should hardly come as a surprise that modern science continues to seek to reconceive secondary qualities as primary ones by finding math handles by which the secondary qualities might be manipulated. The modern biological reduction of lust to testosterone (a mathematically describable molecule of known atomic

¹² Psychoanalysts, alternately, seek to change the *res extensa* via intersubjectivity, through a *res cogitans-res cogitans* interaction. For example, a hysterical woman, through understanding her unconscious sexual attraction for her father, may cease to faint in public. Though this technique has fallen from favor to a substantial degree, the idea is the same: the two worlds are correlated.

structure), mood to neurotransmitters and brain structures, and pain to nervous conduction are just a few examples of this.

Conceived of in this way, secondary qualities – subjectivity, consciousness – are seen by science as forming a reservoir of unsolved mysteries that will one day be drained. And it is this reservoir-draining process that defines monism. Monism differs from dualism in that it does not treat secondary qualities – any of them – as sacred, by which I mean perpetually autonomous. Rather, it regards them as being unsolved mysteries that deserve further attention. In the same way that the modern office worker may have a pile of papers on her desk, in a box marked “to do,” science has a pile of unexplained phenomena called, variously, secondary qualities, qualitative phenomena, mind, consciousness, or subjectivity. No matter what they are called, they are phenomena that have not yet been defined in such a way that they can be treated mathematically – that do not yet have location in space and time. But modern monists, physicians among them, emphasize the word “yet,” and believe deeply that most subjective experiences will one day be mathematically tractable, which is to say, prove to be physical. As Paul Churchland puts it,

The existence of a proprietary, first-person epistemological access to some phenomenon [i.e. subjectivity] does not mean that the accessed phenomenon is nonphysical in nature. It means only that someone possesses an information-carrying causal connection to that phenomenon, a connection that others lack. [Churchland (1995) 198]

It is no surprise that the great movement of 20th century philosophy known as logical positivism should have revolved around the effort to explain away secondary qualities. As one of its leading lights, Rudolph Carnap put it,

Now psychology, which has hitherto enjoyed a certain elevated position as the theory of psychic or mental processes, is to be degraded into a part of physics. [Lyons (1995) li]

And thus it is no surprise that medicine too should be engaged in a long-term effort to explain all medically important secondary qualities, such as pain, weakness, delirium, and shortness of breath, in terms of their primary qualities, such as the movement of neurotransmitters, the absence of adequate ATP, the effect on neurons of low oxygen, and the number of respirations per minute.

As discussed above, physicians, whenever they reconceive symptoms as being signs, thereby denying the power of the patient to serve as sole arbiter of subjective truth, recapitulate the central dynamic of materialist monism.

The Effect of Monism on the Patient

As discussed at the chapter's start, the doctor who cannot turn the subjective symptom "I have a burning pain in my stomach" into the objective finding "you have a stomach ulcer" is incompetent. Doctors know this, and the knowledge drives them to seek connections between subjective symptoms and objective findings; their ability to do this successfully is what keeps them in business. But this drive has a consequence: doctors learn to fear the mystery symptom that defies transformation into objective fact. They learn to group such symptoms into two categories: those that are crucial to an understanding of disease, and those that can be safely ignored. The former, as I have noted, are scrutinized until they are successfully correlated with an objective finding; occasionally, correlation being impossible, the physician alights upon the notion that the symptom may itself be a sign. And this, as noted above, denies the patient's status as arbiter of truth. The latter, moreover, form a reservoir of "irrelevant" data which, while perhaps one day proving useful to medical science, for the time being are judged irrelevant only.

With the notable exception of some psychiatrists, physicians are trained to avoid one class of irrelevant symptom in particular: those that lead nowhere but into further subjectivity. To pursue such symptoms is to embark on an interminable journey; it is to create a black hole of subjectivity that eats up valuable clinic time, and from which no useful (that is to say, potentially objective) information can escape. But physicians who avoid the black hole of subjectivity may never learn, for example, that rheumatoid arthritis is "a personal event, a thing that matters." Taught early on that a patient's musings on the meaning of disease will never link to an objective finding, doctors tend to pass rather rapidly over patient comments destined to preclude correlation or conversion. As a result, sensitive patients may notice a discrepancy between the degree of attention they are paying their own subjective experience, on the one hand, and that which their physician is paying it on the other. Further, convinced as they may be that their subjective experience harbors important medical information, they may find their doctor's willful ignorance alarming.

Patients may also find their physician's monism disconcerting because they realize that the implication of monism is that the body is a machine requiring no soul or consciousness in order to run; experiencing themselves as being conscious and, perhaps, believing themselves to have souls, patients may find this attitude disconcerting. It is worth pointing out that, taking the definition of subjectivity above at face value,

physicians in fact need not treat patients as though they were conscious in order to effect cure. If subjectivity is private, then by definition no observer can confirm that any given person experiences themselves subjectively. As a courtesy to one another they, like all of us, assume that all people are conscious, and have subjective experience. But this is mere courtesy, and in the rapid-fire world of medicine can be dropped when events in the physical world require rapid action. Because subjectivity cannot be made to play a causal role in explanations of human behavior, it can be easily enough eliminated with Ockham's razor, an action some physicians are, apparently, willing to take. As Colin McGinn puts it,

If our data, arrived at by perception of the brain, do not include anything that brings in conscious states then the theoretical properties we need to explain these data will not include conscious states either. [McGinn (1989) 281]

Frustrations With, and Rebuttals Against, Materialism

The preceding has been a rather hard-nosed explanation of one hypothesis regarding "physician impersonality." In closing, I want to mention several interesting critiques of the sort of materialism discussed, as well as problems with the critiques. The idea is to see whether there are any philosophical problems with the technique employed by physicians.

To begin with, my central suggestion has been that physicians generally seek to find an "objective correlate" (which I have called 'sign') of patients' subjective experience (which I have called 'symptom'), and that they then manipulate the sign in their efforts to alter the symptom. When sign and symptom "agree" the physician is engaged in a version of Cartesian dualism. When sign and symptom "disagree," however, the physician prefers the sign to the symptom ("weak objectivity"). Occasionally, she may even reconceive the symptom as a sign; for example, she may say "the patient is unable to breathe but insists that he is fine, therefore he is delirious." This is significant because in so doing the physician violates the central tenet of Cartesian dualism. Once the subjective experience becomes the basis for a diagnosis that rejects it as a truth claim, the subjective quality *qua* subjective quality disappears in the physician's mind. Subjective experience ceases to be autonomous from the physical world, and instead becomes an expression of it. Furthermore, the patient loses standing to serve as an arbiter of truth, which is one important privilege granted the *res cogitans* in traditional dualism.

A number of attacks on the reasoning implied in the paragraph above can be found in modern philosophical literature. The points attacked are:

1. The idea that correlation says anything about causality.
2. The idea that we can know when sign and symptom “agree” or “disagree”
3. The idea that there can be a justification for preferring signs to symptoms.
4. The idea that the chasm between subjectivity and objectivity can be bridged.
5. The idea that there is a chasm between subjectivity and objectivity in the first place.

I will briefly take these points in turn.

To the first, I would note Hume’s retort that causality is correlation. In *An Enquiry Concerning Human Understanding*, he emphasizes, repeatedly, the following, which has come to be known as the doctrine of constant conjunction.

Our idea, therefore, of necessity and causation arises entirely from the uniformity observable in the operations of nature, where similar objects are constantly conjoined together, and the mind is determined by custom to infer the one from the appearance of the other. These two circumstances form the whole of that necessity, which we ascribe to matter. Beyond the constant *conjunction* of similar objects, and the consequent *inference* from one to the other, we have no notion of any necessity or connection. [Hume (1748/1939) 663]

It seems generally accepted that much 20th century philosophy of science seeks to grapple with the problem raised by Hume. [Blackburn (1996) 192] Popper, for example, seeks strenuously to solve “the problem of induction,” induction – the production of logical conclusions not deductively entailed, but empirically entailed – being the empiricist’s dream. As Popper puts it in his famous *Conjectures and Refutations*, “induction, i.e. inference based on many observations, is a myth.” [Hollis (1996) 75] Failing to solve the problem of induction directly, Popper offered “falsification,” which solves it indirectly. One makes non-empirical, risky predictions about the future and then subjects them to rigorous deductive scrutiny. Most practicing scientists seem to have accepted this as a workable procedure; critics hold, however, that Popper relies on induction for falsification to work, and therefore does not solve the problem. [Hollis (1996)]¹³ Without going into further detail, the point is that human beings may not be in a position to notice anything more than correlation in the Universe.

¹³ As Martin Hollis notes, Popper’s belief is that:

1. H → O
2. O

In any event, the attack, if valid, is devastating. If we know correlation only, then the relationship of sign to symptom is correlational only. As such, Cartesian dualism must stand (indeed, all conjunctions, whether between phenomena in the objective world, subjective world, the two, or any others we might postulate, reduce to a dualism of sorts). One can never argue that the objective world is causing the subjective world; they are merely correlated.

To the second, I admit I know little save that if the retort to #1 above is correct, then “agreement” and “disagreement” reduce to “expected correlation” and “unexpected correlation” respectively. I hope to investigate this problem more at a later date.

To the third, a great deal of literature is devoted to debunking the notion that the reasons traditionally given for preferring the objective world – namely that the senses do not lie – are specious, sensation being, as Kandel noted above, an interpretive act. That it appears to be less interpretive at earlier stages of neural processing (data is filtered more and more as it leaves the periphery) does not help matters, at least in theory. Further, if subjective and objective experiences are merely correlated, with neither causal, then it is a matter of choice which one “prefers” if, indeed, either is to be “preferred.” One can easily imagine that a delusional man, permitted to have his delusions take his body to the grave, might have few complaints so

3. Therefore H

Is not true because O might be produced by sources aside from H that science has not yet discovered, or experience has not yet shown. Popper then goes on to argue that

1. $H \rightarrow O$
2. Not O
3. Therefore not H

Is true, according to Popper, because it involves deduction, which, like all mathematicians, he trusts as logical. There are numerous problems with Popper’s proof, however.

1. How can we trust our observation “not O”?
2. The proof assumes that the world will not change tomorrow to turn Not O into O. But this assumption uses the induction that physical laws have not changed yet, so why should they ever change? Induction, being the object of attack, can hardly be instrumental to the proof.
3. How is Popper able to justify his preference of the theory by which O is deemed not to exist over theories in which O does exist?[Hollis (1996) Chapter 4]

I have my own disproof of Popper, which is this:

If O = ‘theory is falsified’ and H = ‘theory is false’ then Popper’s argument reduces to

1. $H \rightarrow O$
2. O
3. Therefore H

Which, as he says, is illegitimate because it relies upon induction. This may be a more elegant way of saying what Hollis has said; alternately, it may be specious due to my lack of training in formal logic.

long as he remained delusional. Alternately, one can easily imagine that treating a dying body so as to preserve the body is laudable, even though this might require the destruction of a conscious (albeit “delusional”) state. Everything hinges on one’s preference of the body to the subjective state, and on the notion that sequentially connected subjective states constitute a “self” more important (more worthy of rescue) than any of the individual subjective states. Whether this is anything more than a moral or aesthetic decision is unclear.

To the fourth, recall that the goal of the dualist is to protect subjectivity from attack by monism or materialists. This leads him to protect the privacy of subjectivity, and to show that it has no location in space.

A classic defense of privacy is the claim that there is no “psychophysical link” bridging the chasm between the objective and subjective worlds; in other words, you can’t get there from here – the subjective world is private with respect to the objective. As David Chalmers puts it, at present nobody knows what the psychophysical link is. All we have, at present, is correlation between the two.

“Nobody knows why... physical processes are accompanied by conscious experience at all. Why is it that when our brains process light of a certain wavelength, we have an experience of deep purple? Why do we have any experience at all? Could not an unconscious automaton have performed the same tasks just as well?” [Chalmers (1997)34]

Chalmers’ question is provocative, and gets at the point, made earlier, by Colin McGinn: contemporary theories of human behavior cannot incorporate consciousness as a causal factor because we do not yet know how consciousness is produced, a problem intertwined with our inability to observe it directly. In efforts to “solve” the problem, thinkers such as Thomas Nagel have explored whether we will ever be able to answer questions such as *What is it Like to Be a Bat?* (1974) and, having determined that one consciousness can never experience a second, have claimed that we are, more or less, stuck with it. The solution is that it is insoluble. As Nagel puts it,

If physicalism [materialism] is to be defended, the phenomenological features [of consciousness] must themselves be given a physical account. But when we examined their subjective character it seems that such a result is impossible. The reason is that every subjective phenomenon is essentially connected with a single point of view, and it seems inevitable that an objective, physical theory will abandon that point of view. [Nagel (1974) 161]

In other words, consciousness isn't subjective, it is subjectivity and thus, by definition, cannot be studied objectively. Note that Nagel, like all dualists, believes that because subjectivity is private, it cannot be located physically – it has no location in space. This, then, typifies the dualist defense of subjectivity.

In the previous chapter I pointed out some problems with the dualists' line of attack, noting that they seem to buy into the materialists' (physicalists') false belief that the existence of the physical world is unproblematic. Further, as should now be clear, a Humean argument against causality renders the search for causal connections of any sort pointless: Hume would say that it is all a matter of empiricism, which is to say, correlation. Thus what the dualists hope to gain by showing that we can never find a causal psychophysical link is unclear; people who deal with the physical world alone can never show causality either. If this is the grounds upon which we ought give up any further efforts to make statements about the construction of the universe, all science would grind to a halt, at least until the problem of induction is solved. It would seem that we are stuck with a state of perpetual wonder, or what Zen Buddhists' call "beginner's mind," a state whose resemblance to strong empiricism merits further scrutiny.¹⁴ It is not clear to me that all dualists would be satisfied with a tip of the hat to the east.

But there are, I think, two additional problems with the dualist line. The first is that dualism is compatible with epiphenomenalism, and yet few dualists want to support epiphenomenalism. If the brain is to produce the mind but not be influenced by the mind, then it must project the mind into an ether of some sort, to be experienced by something that itself cannot affect the brain; but this, of course, is identical with Cartesian two-clock dualism. This dualism, like any other, grants the autonomy of mind while, simultaneously, rendering a direct understanding of it irrelevant – and thus epiphenomenalism is compatible with the model of medical inquiry presented at this paper's outset. Modifications of the brain will produce corresponding modifications of the mind; modifications of the mind will not produce modifications of the brain. Therefore we have dualism and materialism simultaneously, an idea anathema to dualists, many of whom fancy themselves sworn enemies of materialism.

¹⁴ Strong empiricism says that we have no grounds for producing theories about the world based only on observation, that is, strong empiricists like Popper admit the problem of induction; if Popper truly has failed, and no improvements are forthcoming, then strong empiricism must be content with observation alone. This is what "beginner's mind" is all about: seeing the world fresh each moment, without any labeling or preconceptions. It is fascinating that at the highest levels of both western and eastern philosophy we have indications that anything beyond beginner's mind is an illusion.

Many dualists instead want, I believe, some form of emergence, or what John Searle calls supervenience, in which the mind, once produced by the brain, takes on causal powers that allow it to alter the behavior of the brain. [Searle (1995) 126] But this suggests the following likely two possibilities for subject-subject interactions, in which person #1, the physician, alters the mind/brain of person #2, the patient. The assumption is that the brain is a part of the physical world and the mind is not exactly:

Scenario 1: Physical world → Brain 1 → Mind 1 → Mind 2 → Brain 2 → Physical world

Scenario 2: Mind 1 → Brain 1 → Physical world → Brain 2 → Mind 2

Both are clearly possibilities in a supervenient world. While Scenario 1, allowing for intersubjectivity, is the personal favorite of anthropologists and psychoanalysts, and while people in close interpersonal or transpersonal relationships (lovers, perhaps, or spiritual folk) experience their interactions as occurring in this way, Scenario 2 is nevertheless viable. Yet on inspection, Scenario 2 is compatible with monism. Eliminating the first two stages of Scenario 2, we see that manipulations of the physical world – perhaps by giving somebody Ritalin – we can effect a change in Mind 2. Further, it should be clear that one of the two central tenets of subjectivity has in this way been shattered: the mind is no longer private. It can be manipulated via manipulating the objective world.

Thus the only dualism that remains, after one argues for emergence, is *de facto* dualism, or that which is produced by what McGinn calls “cognitive closure.” [McGinn (1989) 275] The argument here is that human beings, by virtue of our neural construction, are not in a position to observe the relationship between the physical and subjective worlds.¹⁵ But this is weak dualism; it cannot argue that monism is false – it can only argue that it might be. This is a long way from Descartes’ strong two clocks dualism.

On a second tack, it is not clear to me why my inability to feel what a bat feels represents a novel problem in science. Certainly we cannot be asking that my consciousness become, momentarily, bat

¹⁵ Incidentally, this argument is often lost on those who insist that there is no evidence for the existence of God, and that therefore there is no God, a self-contradictory argument if there ever were one. The only way that human beings can know there is no God is if we have been granted all of the sensory and intellectual powers necessary to reach such a conclusion legitimately. But what are the chances that we have such powers, if one believes solely in evolution, whose main tenet is that organisms are selected only to have abilities that confer a reproductive advantage. The ability to detect God was not necessarily adaptive 10,000,000 years ago, when the human brain reached its final form! Thus the only certain scenario in which we do have such powers is one in which God endowed us with them. As such, we ought admit that we may – or may not – have cognitive closure with respect to our God-detecting abilities. We can’t know, because the funny thing about cognitive closure is that it precludes an awareness of itself. Thus good atheists should, in fact, convert to agnosticism.

consciousness – for we would not ask a hydrogen atom to be an oxygen atom, or a table to be a chair. Rather, we must be asking how my consciousness can confirm the existence of bat consciousness. But again, how does a hydrogen atom confirm the existence of an oxygen atom? The proper response, I believe, is “through interaction,” in which the properties of the hydrogen atom are modified as a result of interacting with the oxygen, perhaps as a result of having a new configuration of electrons in orbit around its nucleus, when its nucleus comes to rest a particular distance from the nucleus of the oxygen. But this is unsatisfactory – is the hydrogen atom, which I take now to be its nucleus (if it is to exist independently at all) now “aware of” (by which I mean “affected by”) the oxygen atom? Is it not in fact only aware of a shift in the orbits of the electrons around it, and the forces upon its nucleus? The point is that *any* point of view, whether subjective or physical, is locked into itself. From the perspective of any chunk of physical matter, an interaction with another chunk is experienced simply as a shift into a novel configuration; there is never a direct awareness of the other chunk, whatever that means. But this mild standard is when my subjectivity interacts with a bat: it is altered. Is it altered by the bat’s physical body? The bat’s subjective experience? There is no way of knowing. The point is that I do not think it is a unique problem that one subjectivity cannot confirm the existence of any other. This leaves me confused as to how the subjective world presents a problem of knowledge that does not plague the objective world.

This brings us to the fifth point, which is the one with which I am in the most agreement. It is not at all clear that there is any clear dividing line between the objective and the subjective worlds; as such, one does not exactly correlate or preferentially handle one to or over the other, and doctors are mistaken if this is how they conceive of their task. The remarks of Kandel earlier go a long way towards showing this, as does a simple thought experiment. Taking a monist, reductionist explanation of sight, consider that a photon moves from the sun to a tree, is not absorbed and instead bounces off into my eye, where it induces a chemical transformation in my retina, which is detected and processed sequentially by my neurons, eventually reaching my consciousness as the image of a tree. Where, in this chain of events, are we to draw the line between the tree and my conscious image of the tree? At the bark of the tree? Halfway between it and my eye? When the photon enters my eye? Hits my retina? At the mysterious psychophysical link, wherever that is? This gets at a problem with Kandel: the brain may be interpretive, but where does the interpretation start? If one says the retina, then one must ask why a broken bond in 11-cis retinal is an

interpretation of a tree while a photon reflected off of its bark is not. If one says the thalamus, similar problems arise, and on and on. This critique is a watered-down version of Quine's attack on the analytic-synthetic distinction, which I will reserve for the footnote below.¹⁶

¹⁶ **Analytic v. Synthetic:** This dichotomy comes from the Logical Positivist movement, which sought to overturn rationalism (see "Empiricism v. Rationalism"), and is especially attributed to A.J. Ayers, who wrote about it in his 1936 work *Language, Truth, and Logic*. According to the philosopher Martin Hollis, Ayers believed that:

All statements fit for scientific use can be divided into two exclusive kinds, analytic and synthetic. If a statement is analytic, its truth or falsity depends solely on the meanings of its terms. True analytic statements are tautologies, as, for example, 'all bachelors are unmarried' or '2+2=4'. If a statement is synthetic, its truth or falsity depends on matters of fact, as, for example, with 'all bachelors are carefree'. Thus whether all bachelors are unmarried depends on what 'bachelor' means; whether bachelors are carefree depends on how flesh-and-blood bachelors respond to life. One must never confuse words with things, for instance by thinking it a fact of the world that all bachelors are unmarried. This sort of confusion spawns many errors, like the rationalist belief that geometrical statements describe the necessary properties of space." [Hollis (1994) p.52]

Though this last sentence may be confusing, it is important. Empiricists (of which logical positivists are a subtype) hold that geometrical statements do not describe the necessary properties of space. Instead, they say that it is "as if" they describe them. That is, mathematics is useful because it corresponds to the world quite well. But corresponding to the world is not the same as actually describing the world properly, according to empiricists. The strict empiricist line is that we cannot know whether our models of the world are true, we can only know that they work "as if" they were true. It is the conflation of these two properties -- truth, and usefulness -- that is the "error" Hollis refers to. Usefulness does NOT equal truth.

A second important point is that all analytic statements are based on conventions. All circles are round, and nobody has yet found a square circle, because circles are *defined* as round. Adults laugh at a child who says "look! A square circle!" because she has violated a rule of analytic thought, which is to accept the conventional definition of a term, in this case the term "circle." But the adults' laughter points out a fundamental problem: that analytic statements are *incapable of being proven false by referencing the real world*. The only way to disprove an analytic statement is to show that it violates a previously confirmed analytic statement, or axiom. This leads to the Hollis's point that analytic statements are tautological. As such, according to logical positivism, you learn nothing new about the world from analytic thinking. This is not to say it isn't useful. It's just tautological. And this is the basis of their attack on rationalism. Rationalism, they say, uses analytic reasoning to reach conclusions about the world. But as just explained, this is invalid, since analytic reasoning in fact only gives you information about the pre-existing language you are using, not about the world.

Logical positivists do not dislike analytic thought. On the contrary, they find it extremely useful because it makes a good "filing system" for facts about the world. It helps to indicate relationships between ideas that might have previously seemed unconnected, and it can indicate fruitful areas for new inquiry. However, to learn new things about the world we need to put ourselves in position to make synthetic statements. And the way we do this is by generating hypotheses that we then test by an experiment of some sort. This is what empirical scientists do. They design and run experiments. This stands in sharp contrast to the way we go about positioning ourselves to make analytic statements. To do this, we must learn a language, and a pattern of thought. This is what happens when one learns Calculus, for example; one spends year upon year working out all the implications of the language of mathematics, without ever running a single data-gathering experiment.

The analytic-synthetic dichotomy was invented by empiricists in order to show rationalists that they will never understand the universe just by thinking about it. You need to perceive 'brute facts' about the

universe in order to understand it. And this leads us finally to the two main objections to logical positivism.

The central objection is that analytic-synthetic is a false dichotomy. A person needs an analytic system in order to begin a synthetic endeavor, according to this critique. For example, you need to know that there are shapes before you can see and identify circles. The point is that it is impossible to think of a way to order reality without a pre-existing theoretical structure or 'language'. Without some rudimentary organizing principle, the mind would be in a constant state of what the Buddhists call "Beginner's mind," completely free of any preconceptions, and utterly unable to make sense of the world in a conventional manner. Furthermore, the objectors say, if this initial critique is true -- if you need a 'language' in order to observe facts -- it means that synthetic statements rely upon analytic statements. And this, of course, is a huge problem. Because if synthetic statements are intimately connected to analytic ones, the distinction between them is not crisp. There is no analytic-synthetic dichotomy; it is a false dichotomy. Every fact becomes contingent upon a pre-existing idea; the mind is not a tabula rasa after all, and there are no purely perceived "brute facts" that a human being can know about; everything is mediated by analytic language.

Taking this first objection even farther was a philosophical movement called Pragmatism, which is often associated with the thinker V.F. Quine. He attacked the "two dogmas of empiricism", which hold that 1) the analytic-synthetic distinction is real and 2) that brute facts can be observed, in a slightly different way than explained above. Regarding 1), he said that actually analytic statements can't be distinguished in principle from synthetic ones, the way logical positivists would like. This is because in practice (note that the attention to practice is why this is called "pragmatism" -- he's interested in how real people think) analytic statements are revised based on experience. For example, when Newtonian physics didn't work to explain the atom, quantum physics were invented. But changing one's language based on experience sounds an awful lot like synthetic thinking. And this is Quine's point; there is no clear distinction between the two types. In this sense, Quine is a more radical advocate of empiricism than the logical positivists, because he believes that all human thought is influenced by experience. Regarding 2), Quine picks up the idea that it is ridiculous to think that you can observe something without theory, and notes that in fact any given observation may be tied to so many different theories that it isn't at all clear which theories we ought alter when we encounter an odd observation. For example, if I were to suddenly hear a voice in my head, does that lead me to doubt my disbelief in God, or doubt my sanity, or doubt my disbelief in telepathy, or wonder whether I just was dreaming for a moment? I have a variety of ideas I can alter, and in the process, a variety of other ideas that I can protect, depending upon my arbitrary preferences. Given this, there is no one-to-one correspondence between experience and belief. This throws into question our ability to objectively falsify hypotheses, or conduct empirical experiments. And thus it throws into question the ability of empiricism to provide us with a correct model of the world, which is, of course, exactly what the logical positivists hoped to do with the analytic-synthetic dichotomy. Which is why Quine's critique is mentioned as a powerful argument against it.

A second objection attacks the idea of subject-object dualism, which is one of the cornerstones of Western philosophic and scientific thought, and undergirds rationalism as well as empiricism. For this reason this objection is even more far-reaching than Quine's above. The objection claims that there is no reality "out there" which an observer can model within her brain -- "in here" -- without affecting it. Rather, it says, there are only experiences. And experiences have a twofold nature. The word experience can be used to label the thing described -- the "out there" part -- or to label the subject's "in here" thoughts. But conveniently the word is the same in both cases -- it combines the "out there" and the "in here" parts in one word, which is analagous to what critics of subject-object dualism say is in fact true. For example, if after riding a roller-coaster you should exclaim to your friend "what an amazing experience!" it would be clear that you were describing neither the roller coaster without you, or your mind state without the roller coaster; you are describing the single experience produced by your ride on the roller coaster. In any event, if it is true that there is no reality "out there" which exists independent of an observer, then clearly there can be no true synthetic statements, which by definition assume that external reality can be perceived unmediated by a mind.

It is worth noting that these two objections attack different weak points in the empirical argument. The first says "even if there is an objective reality 'out there', a human being can't perceive it objectively." That is, it works as an argument even if there is an objective reality. The second questions the existence of

Moreover, as Russell quotes James as saying, and as eastern philosophers such as Nishitani have noted, “experience has no such inner duplicity” as suggested by subject-object dualism. [Russell (1945) 813] That is, when looking at a tree, if I forget my preconceived notion that there are two things, a tree and me, I may notice that in my field of consciousness there is, simply, the image of a tree, and that there is no “me” clearly distinct from the field. Experience is unified, and experience is all there is. Again, it is worth noting that James called his doctrine “radical empiricism,” whose similarities to the Zen notion of Beginner’s mind were already noted.

objective reality, says there can be no ‘out there’ without an ‘in here,’ and thus works as an argument even if the mind could model external events precisely, by saying that those external events could not have occurred were the mind not present to observe them. In this sense they are complementary arguments.

Chapter 4: Reductionism and Holism

It is a settled assumption for modern thought in practically every field, that to explain anything is to reduce it to its elementary parts.

— E.A. Burt

Internal Medicine, Not External

There is no medical sub-specialty called “External Medicine,” although its prevalent inverse, “Internal Medicine” would seem to imply one. This is because medical thought assumes that disease is located under people’s skin, not external to it.¹ In an effort to cure, physicians move in a particular direction, which I will call a micro-reductionist direction. They conceptually disassemble bodies, peeling back layer after layer after layer, revealing part within part within part, until they have found the smallest culpable agent of disease.

Patients hire physicians to perform such micro-reductions. However, because micro-reductions take as their starting point the surface of the patient’s body, physicians frequently do not develop an awareness of all those phenomena that occur at the surface of the patient and beyond, and so they have difficulty perceiving the patient’s personality, and the larger social, moral, and aesthetic contexts in which they live, and which mold their behavior. The failure of some physicians to perceive such phenomena is experienced by some patients as alienating, and contributes to the charge of physician impersonality.

This chapter will be divided into several sections. In the first I will define micro-reductionism and holism. In the second, I will give some examples of micro-reductionism at work in medical treatment. In the third I will explore why micro-reductionism is so popular with physicians. In the fourth I will show that within academia, a powerful intellectual argument for why social phenomena can be understood as human psychology writ large has been advanced, and that physicians may draw upon its assumptions. And in the fifth I will consider a theoretical reason for distrusting micro-reductionism in the absence of its holistic counterpart, which revolve around the notion of emergence. Finally, I will explore the negative effects micro-reductionism can have on patients, the beneficial ones by then being apparent.

¹ External medicine is left, for the most part, to the world of public health. In looking at people’s insides, doctors look at their parts, and in this sense make evident their preference.

Definition of Micro-Reductionism, Holism, and Holons

Nothing in the world is a whole only, or a part only. Everything is simultaneously a whole and a part; the analytical direction in which one moves determines what we see. If we sever connections we see parts; if we seek to observe hidden ones we see wholes. The term systems theory uses for “whole/part” is holon.[Wilber (1995)]² Systems theory assumes that holons are nested within one another.

Ken Wilber makes four points regarding holons that are useful before defining micro-reductionism and holism. [Wilber (1995) 35-108] First, holons are dependent for their existence upon their sub-holons, but are not dependent upon their super-holons. That is, if you cut the connections between holons, the whole they created disappears, but they remain. Dissect my body and you still have organs. Dissect my organs and you still have cells, and so forth. Sub-holons survive after the destruction of their super-holons. We might add to this that a scientist, examining an isolated sub-holon, would be unable to determine whether or not its super-holon were alive or not. Thus a pathologist might look at my blood after I was dead no differently than he would if I were alive.

Second, the behavior of holons is constrained by their super-holons. Their connections to other holons actually limit their behavioral options, while disconnection increases their options. This nuanced idea leads eventually to the notion of emergence, which I will discuss in the penultimate section.

Third, holons are organized hierarchically, or as Wilber puts it, “holarchically.” “Super-holons” are, in a general sense, more complex than the ones they comprise. The more complex a holon – the more sub-holons it contains – the “higher” it is in the hierarchy. For example, it seems appropriate to say that people are more complex than organs, which are more complex than cells, which are more complex than

² Many, if not most, of the ideas used in this section are taken from the work of Ken Wilber, whose brilliant Sex, Ecology, Spirituality I can hardly recommend highly enough. However, I believe he has made a bit of an error in his discussion of the four forces operating upon a holon (agency, communion, transcendence, and self-dissolution). He sometimes seems to confuse self-dissolution with agency, at least in the sense that while he says wholes can decompose either by agency or by reverse-emergence (“dissolution”), he doesn’t explain how we know which is which. It isn’t clear to me that they are, in fact, different things at all. Further, he seems to assert the existence of emergence (frequently talking about “the available evidence” but never presenting it). I am comfortable only with entertaining its possibility; as I show in this chapter, it strikes me that reductionist thought may yet explain emergence in reductionist terms. And connected to this, Wilber makes what seems to be a fairly serious error in his explanation of evolution (he assumes it has intrinsic directionality, an idea Gould has attacked convincingly, and *with* supporting data, in Full House.) This error makes me wary of some of his other assumptions, which may also have flaws. For all of these reasons, which are likely to make sense only to readers of his work, I have presented here a more cautious and streamlined version of his ideas, which I have modified with those of more mainstream writers.

molecules. And it likewise seems appropriate to say that they form a “natural” hierarchy. The logical (natural) way to determine this hierarchy is to use the dependency criteria outlined in the first point above. Often such hierarchies are difficult to form. Which is “higher,” a Redwood or a Grizzly Bear? When rank is obscure, it often turns out that the two holons are actually members of the same level of organization. And indeed, as Wilber notes, holons tend to interact with other holons at their own level of organization, and to be relatively poor at recognizing ones that are significantly higher or lower in rank. Atoms recognize other atoms – they live in a world of atoms – but are probably hard pressed to recognize a Grizzly Bear. Cells recognize other cells – they live in a world of cells – but also cannot recognize a Grizzly Bear. I can easily recognize a Grizzly Bear, but I have never seen or felt an atom. In general, it seems that holons are designed to recognize holons at their level of organization.

Fourth and finally, human beings use different languages to describe the different hierarchical levels of a given holon. For example, we describe bodies in terms of arms and legs, whereas we describe arms and legs in terms of cells, and we describe cells in terms of molecules, and molecules in terms of atoms. Each level of organization suggests a different terminology. In general, we describe a level using the names of holons one level below it. Rarely do we describe it in the terms of the level two below it, or ten below. Thus it would not occur to most people to describe the position of a body – say a body throwing a baseball – in terms of the position of its component atoms. This would take far too long. “There’s a hydrogen six feet above the ground, and two nanometers to the left is another hydrogen, and just below that is a phosphorus....” Trillions of sentences later, we still wouldn’t know what the body looked like. So we use a language more appropriate to this level of the hierarchy – we talk about its largest component holons: its limbs and organs. Or at least, this is what we do in every day conversation. The world of science is an entirely different matter, and as I will suggest, patients may find it alienating to have their selves discussed using the terminology of holons several levels of organization below.

Having defined holons, we are in a position to define reductionism and holism.

Micro-Reductionism

There are several types of reductionism: predicate reductionism (when we translate German into French), law or theory reductionism, (when we explain the laws of chemistry in terms of the laws of

physics) and micro-reductionism (when we suggest that holons are simply the aggregate of their sub-holons.) In each case, reductionism boils down to the claim that one explanation of a phenomenon “is really” or “is just” another one, in so many words. [Garfinkel (1981), Trout (1991), Searle (1992)]

This paper is concerned with micro-reductionism only, since it is the sort of reduction physicians most often perform on patients.³ For the purposes of this paper, micro-reductionism should be understood as having two components:

1. It seeks to understand phenomena by breaking them apart, and analyzing the component pieces both alone and in combination, in an effort to understand how the whole phenomena is created.
2. It believes that the larger-level phenomena *can be described in terms of their component parts*. As

Alan Garfinkel puts it,

a certain object can be explained as just the sum of its parts. In microreduction the upper level object is explainable by the (lower level) microtheory. Therefore, the upperlevel explanations can in principle be eliminated in favor of the microexplanations. [Garfinkel (1981) 444]

This notion of *descriptive equivalency* is what reductionism is all about.

Holism

³ Micro-reductionists prefer to start with a whole and to then cut its connections. This cutting reveals the isolated sub-holons of which it is composed. They then take these sub-holons and cut them apart, revealing their sub-holons. They continue in this direction, getting smaller and smaller, always seeking to reveal more detail.

This analytical method is quite powerful, for the following reason: some phenomena are far more dependent upon certain sub-holons than upon others. Freeing these sub-holons from their ties to one another permits them to be examined, and perhaps experimentally replaced, one at a time. And this is precisely how most scientific and medical experiments work. One variable – perhaps cholesterol level, or the amount of alcohol in the diet – is changed in order to examine its impact on the system as a whole. Such experiments would be impossible without reductionism – as, indeed, they were before reductionist science revealed that cholesterol is a part of meat, or that alcohol is a part of wine. However, this method sometimes spins out of control, and reductionists claim that a single part is more or less equivalent to the whole. They may hold aloft a holon and cry “the engine is the car! Biology is destiny! Spirit is History!” There are many famous examples of such reductionist claims in the history of western intellectual thought, most of them occurring outside of medical thought. Karl Marx, for example, claimed that economic forces more or less determine the social and political structure of society, which in turn determines how people think. As he put it, “the mode of production of material life conditions the general process of social, political, and intellectual life. It is not the consciousness of men that determines their existence but, on the contrary, their social existence that determines their consciousness.” [Marx (1859/1975) p. 424] In short, he claimed that a *part* of society, its economic base (“mode of production”), determined the structure of the whole, including the way people think (“the consciousness of men”). Closer to the world of medicine, the modern debates over nature versus nurture are also prone to hyper-reductionism, with extremists alternately claiming that a particular phenomenon, such as male aggression,

For our purposes, holism should be understood as a preference for an upwards direction of analytical movement. Holists prefer to understand a phenomenon not by picking it apart, but by placing it within a larger context in order to study its behavior under these new circumstances. This should be recognizable as a mainstay of scientific experimentation. For example, in studying an atom, a holist might set out to observe all the ways in which atoms can fit into larger structures. How do atoms behave in molecules? How do they behave when the molecules are embedded in cells? How do they behave when the cells are placed in bodies? By observing behavior changes in the atom as its connections proliferate, the holist gains a deep understanding of how it relates to its environment – something that a reductionist analysis, in picking the atom apart, might well miss. The benefits of such an approach are fairly obvious, and it is no surprise that many academic disciplines, notably sociology, anthropology, public health, and the life sciences, seek to understand individuals by examining the larger contexts in which they live. Physicians do the same with every sub-holon in the body; they seek constantly to see how the lung works in the context of the circulatory system, or the Thyroid gland works in the context of the endocrine system. But they frequently fail to do the same with the whole person; it is not a strong medical instinct to ground a patient in a family, a culture, a society, or a narrative.

A second aspect of holism likewise corresponds to the second component of reductionism. Where reductionism holds that the language used to describe a given level of organization can come from any level below – for example, where it holds that a human body can be satisfactorily described in terms of atoms rather than organs – holism does not. In general holism finds it misleading to talk about phenomena in this way

Micro-Reductionism at Work in Medical Treatment

The central argument of this chapter is that physicians routinely perform three types of micro-reduction on their patients, the first two pure, the third a mixture of these, and that patients sometimes find this alienating. The micro-reductions are as follows:

1. Temporal reductions are known as “history taking.”
2. Spatial reductions are called “the physical.”

is either “genetic” or “cultural.” Many critics dislike such simplistic explanations, and refer to them

3. Reductions drawing upon both time and space are termed “functional reductions.”

When taking a history, the doctor asks “when did this problem start?” This question seeks the smallest sub-holon available, the current problem being taken as the one requiring reduction. Follow-up questions ask “and then what happened?... and then what happened?... and then what happened?” until, finally, the patient has reached the present. It is assumed that the present includes the past, and thus that past events are relevant to an understanding of the instantaneous trajectory of the illness at hand. In this sense, the history-taking is an effort at temporal reduction. The doctor is trying to tease apart the temporal parts – the chronology – of the disease, in order to track its evolution.

When performing a physical examination, either literally or in her mind, the doctor engages in spatial reduction. The entire patient is broken down into his sub-holons, be they organs, organ systems, molecules, viruses and bacteria, and the like. For the most part, this is the sort of reduction that most people assume when they hear the term.

When objects change position over time, and especially when groups of objects move around and through one another in a precisely choreographed dance, a combined spatio-temporal reduction is called for. These are properly termed functional or procedural reductions. The beating of a heart is seen in terms of the contractions of individual muscle cells; the breathing of the lungs is seen as the movement of gasses across the thin membrane of alveoli; the worsening of pneumonia is seen as the unchecked reproduction and proliferation of bacteria, with the immune response of the host often only worsening matters.

Seen in this way, most medical research and diagnosis can be seen as exercises in spatial, temporal, and functional reductionism. And seen in the context of the philosophy of science, such exercises become predictable.

To take a concrete example, an infant presents with a lifetime history of breathing difficulty persisting to the present; examination reveals a problem with the part of her called the lung. Examined closely, only a part of the lung has a problem – the part involved in mucus production (it is making too much too thickly). Examined closely, the problem appears to be with only a part of the mucus producing system – the chloride transporter. Examined closely, the chloride transporter is almost perfect, except that it is missing a small part – the amino acid phenylalanine. And the cause of this, finally, is with a part of the transporter-

pejoratively as “reductionistic.”

producing process, in this case with the blueprint for the transporter, the DNA. Three nucleotides of DNA, on chromosome 7, have been deleted by mistake; as a result phenylalanine was not included in the transporter protein. Once genetic testing reveals the absence of these three nucleotides, the doctor can confidently deliver a diagnosis of cystic fibrosis.

What is important here is the process the doctor used to reach her diagnosis. She moved in a particular direction, from wholes to parts, always breaking things down, always getting smaller. And at the end of her journey she had a remarkable story to tell: three missing genetic building blocks, smaller by far than grains of sand, were causing a debilitating disease at a much higher, and relatively enormous level – that of the whole person. This sort of detective work is an example of micro-reductionism at work.

After diagnosis, the doctor administers a treatment that corrects the problem. Ideally, the treatment is quite specific – it fixes the broken part without harming the surrounding functional ones. Thus the ideal treatment for cystic fibrosis, not yet devised but eagerly sought, is for the missing nucleotides to be inserted into chromosome 7. This done, the corrected gene will produce a proper protein, which will form a functional chloride transporter, which will ensure normal mucus production, which will allow adequate lung function, which, finally, will allow the child to breathe normally. As such, it seems that medical cures travel from the level of the part up to the level of the whole. Such a process is not, as it might at first seem, holistic, because it does not question the notion that wholes are simply the sum of their parts.

However, an alternative curative technique is open to the physician. Lacking the capacity to alter the defective part directly, the doctor may instead seek to alter the environment in which it exists, and thereby change it indirectly. Thus a doctor may administer nitroglycerine to a patient with coronary artery disease. Although the drug does not affect the lipid plaques in the patient's arteries, it does dilate the arteries sufficiently to preserve blood flow to ischemic myocardium, thereby diminishing the negative effect of the plague on blood flow.

Given this, we might argue that physicians have no overarching bias towards micro-reductionism. Rather, they employ both reductionistic and holistic thought in the course of diagnosis and treatment. I believe this critique overlooks three considerations, two practical, and one theoretical. The practical considerations are, first, that doctors spend far more time being reductionistic than holistic, and second, that diagnosis is primarily reductionistic, and occurs in the presence of the doctor, while cure, which is

sometimes holistic, does not. Therefore during the time spent with the doctor the patient experiences himself as being reduced to his component parts.⁴

The theoretical consideration is the more important. It notes simply that doctors begin their analysis of disease at the boundary between the patient and the rest of the world; they then plunge under the patient's skin in their search for disease. As such, regardless of the ratio of reductionism to holism that occurs within the body, no holistic activity occurs above the level of the individual. As a result, a patient's extra-physical properties are not routinely or systematically observed by physicians. This problem will be explored in greater depth in the section on emergence, below.

Why Physicians Prefer Micro-Reductionism

There exists an extensive literature on reductionism in science. [Trout (1991), Garfinkel (1981), Fodor (1974), Oppenheim and Putnam (1958), Carnap (1938)] It is not my intention to recapitulate it. Its general thrust, however, is that scientific thought tends to be reductionistic – that is, while capable of both holistic and reductionistic thought, its heart lies in the latter camp. Many critics, especially after the apparent failure of logical positivism, are eager to proclaim the bankruptcy of reductionism in general. Nevertheless, micro-reductionism, like a barnyard epithet, happens.⁵

⁴ Most visits to the doctor revolve around the doctor's efforts to diagnose a problem (a process requiring reductionistic thought) and end with a prescription, a slip of paper marking both the end of diagnosis and the beginning of treatment. The doctor and patient then part ways, ensuring that the process of curative whole-building occurs in private rather than as a shared event. In this sense, from the patient's experience, the doctor seems more concerned with breaking problems down than with building wholes. When doctors spend significant time with patients, as many do, the situation is otherwise.

⁵ To those moderns trained in the so-called "basic sciences" this is fairly obvious. The organic chemist thinks about large molecules, such as steroids, in terms of their component groups, such as benzenes, alcohols or aldehydes, which in turn are thought of in terms of their component atoms. The student of chemistry has spent countless hours conceptually breaking atoms apart, and determining the orbitals of their component electrons. The physics student has likewise reduced complex objects like airplanes to component qualities like mass and volume; the biology student has constructed models of the ideal cell by imagining first its nucleus, then its mitochondria, and, one by one, its component organelles. As hour upon hour, year upon year, of such thought accumulates in the scientist's mind, it becomes second nature for her to reduce things, and to think of them in terms of their parts. And in learning to think this way, she learns to talk this way as well. It becomes commonplace for her to describe large objects in terms of smaller ones, large processes in terms of smaller ones. Much smaller ones.

That reductionism is one of science's central analytic techniques is not lost on outside observers either. As numerous scholars have noted, atomism – the belief that the world is composed entirely of tiny, impenetrable pieces of insensible matter – began with the ancient Greeks, particularly Democritus. By the late middle ages, this belief, associated with now with nominalism, was in full swing again, and it grew

The modern rivalry between micro-reductionism and holism has been present since the start of the Enlightenment. Boyle, for example, worried about the souls of those who “dispute anxiously about the properties of an atom, and be careless about the inquiry into the properties of the great God, who formed all things.”[Burt (1952) 196] He felt, in short, that in focusing on little things, humanity might lose sight of the big picture – a classic holist fear. Nevertheless, it was, ultimately, reductionism that won the day. The philosopher Hobbes codified atomism into a coherent world view, and, according to Burt, “from now on it is a settled assumption for modern thought in practically every field, that to explain anything is to reduce it to its elementary parts.”[Burt (1952) 134] A stronger statement about the hegemony of reductionism we are unlikely to find.

Granted that reductionism was and is popular within science, we might ask why this might be. What is the appeal of reductionism? Again, enormous thought has been put into this question; for our purposes, there are at least three distinct answers.

First, human beings are naturally inclined towards reductionism. Whether attempting to fix the car, put together a new table, learn to read, work out a math problem, or resolve an interpersonal squabble, many people are tempted to break the problem down in an effort to fix it. Moreover, reductionism obviously “works.” Extraordinary, even magical offspring of scientific labor fill our houses and our lives – electricity, stereo systems, computers, airplanes, antibiotics, heart-lung machines, in-vitro fertilization, and on and on ad infinitum. None of these would have been possible without reductionistic thought.

Second, reductionism supports one of the main metaphysical movements of western science: positivism.

As Burt notes,

The central position of positivism [... is that] it is possible to acquire truths about things without presupposing any theory of their ultimate nature; or, more simply, it is possible to have a correct knowledge of the part without knowing the nature of the whole.

[Burt (1952) 227-8]

stronger during the Enlightenment. Newton, whose genius achieved cult status even during his own lifetime, and whose every word became a law in the minds of many, believed that the world of matter was a world possessing mathematical characteristics fundamentally. It was composed ultimately of absolutely hard, indestructible particles.... All changes in nature [according to Newton] are to be regarded as separations, associations, and motions of these permanent atoms.[Burt (1954) 231]

Clearly, Newton’s conception is almost identical to the explanation of reductionism given above. Parts plus their connections equal wholes.

To understand Burt's linking of positivism to reductionism, recall that Enlightenment science sought to extract itself from the grip of metaphysical thinking in general, since Scholastic and religious metaphysics were dogmatic and restrictive. In order to accomplish this, science imposed an internal ban on all efforts to connect its findings to larger (i.e. unprovable) implications. Thus, for example, science sought to examine matter and motion, space and time, without proposing their purposes. This permitted science to ignore narrative in its quest for mechanism, as we have seen in Chapter 1. Moreover, the growing notion of a "clockwork universe" lent itself to the idea that a part of the clockwork could be removed, examined, and replaced without the contraption as a whole being any the worse for wear. If this were true of clocks, why couldn't it be true of the universe? Both ideas validated scientists who examined parts of the universe without relating them to the whole – without fully contextualizing them. In short, they validated a preference for reductionism over holism.

Third, scientists have always loved simplicity. The infatuation remains, to this day, unjustified; for example, when pressed, physicists cannot explain why they believe that a unified field theory is possible; most will admit that it simply seems likely from the standpoint of aesthetics. Nevertheless, Ockham's razor remains a favorite tool in scientific thought ("plurality should not be assumed without necessity"); or as Galileo put it, "nature doth not that by many things, which may be done by few." [Burt (1952) 75] Simplicity is sought because it is pretty. In a search for simplicity, many scientists are drawn to the idea of a common denominator that might undergird, and thus unify, disparate phenomena. And reductionism, capable as it is of reducing two apparently distinct objects – say a person and a rock – to the common denominator of the atom proves a useful tool in this effort.

For a more elaborate and eloquent presentation of this idea, Burt's excellent work should be consulted. [Also see Hollis (1994), Russell (1945), Papineau (1996)] The central point is that, as Burt said, "for modern thought in practically every field... to explain anything is to reduce it to its elementary parts."

Micro-Reductionism as a Defense Against Social Awareness

In practice, this idea may encourage doctors not to explore patients' social worlds, and many may feel they have the intellectual backing to do so, because at present there is a movement within the biological sciences to do away with traditional social science. Recall one of Emile Durkheim's most famous ideas,

that of the social fact, taken from his landmark 1897 work *Suicide*. Durkheim makes the startling claim that individual actions, like suicide, are caused by forces that exist independent of the individuals who kill themselves. Here is how he puts it:

Collective tendencies have an existence of their own; they are forces as real as cosmic [physical and biological] forces, though of another sort; they, likewise, affect the individual from without, though through other channels. The proof that the reality of collective tendencies is no less than that of cosmic forces is that this reality is demonstrated in the same way, by the uniformity of effects. When we find that the number of deaths [naturally caused ones, as *opposed* to suicides!] varies little from year to year, we explain this regularity by saying that mortality depends on the climate, the temperature, the nature of the soil, in brief on a certain number of material forces which remain constant through changing generations because independent of individuals. Since, therefore, moral acts such as suicide are reproduced not merely with an equal but with a greater uniformity, we must likewise admit that they depend on forces external to individuals. Only, since these forces must be of a moral order and since, except for men, there is no other moral order of existence in the world but society, they must be social. But whatever they are called, the important thing is to recognize their reality and conceive of them as a totality of forces which cause us to act from without, like the physico-chemical forces to which we react. So truly are they things *sui generis* and not mere verbal entities that they may be measured, their relative sizes compared, as is done with the intensity of electric currents or luminous foci. Thus the basic proposition that social facts are objective, a proposition we have had the opportunity to prove in another work and which we consider the fundamental principle of the sociological method.

[Durkheim, (1897/1951) p. 307-310]

If ever there were a clarion call for the idea that human beings are made from without, by forces independent of genes and psychology, this is it. This is a classic anthropological position, and a traditional liberal claim: that not all human behavior is reducible to events that occur in individual heads. The crucial concept is that “collective tendencies have an existence of their own,” are “*sui generis*” (meaning self-made) and “cause us to act from without.” This belief is an example of holism, since it holds that wholes have properties which are irreducible to their component parts.

But against this classic social-science view comes a more modern, micro-reductionist perspective, in this case taken from the strident work of two of evolutionary psychology’s most celebrated theoreticians, John Tooby and Leda Cosmides:

It is now possible to locate “Man’s place in nature” to use Huxley’s famous phrase.... Humans are self-reproducing chemical systems, multicellular heterotrophic mobile organisms (animals), appearing very late in the history of life as somewhat modified versions of earlier primate designs. Our developmental programs, as well as the physiological and psychological mechanisms that they reliably construct, are the natural

product of this evolutionary history. Human minds, human behavior, human artifacts, and human culture are all biological phenomena -- aspects of the phenotypes of humans and their relationships with one another.

[Tooby and Cosmides (1992) 20-23]

It is difficult to imagine a more thorough rejection of Durkheimian thought. Here, "human minds, human behavior, human artifacts, and human culture are all biological phenomena." Tooby and Cosmides scoff at the idea that collective tendencies have a life of their own. They don't. They emanate out of the same thing everything else does: biology. The idea of culture being "*sui generis*" is preposterous.

Thus where Durkheim argued that social tendencies are as real as biological forces "though of another sort," Tooby and Cosmides rebut forcefully that they are of the *same* sort. They are *not* distinct. They are indistinguishable. Culture *is* biology. Mind *is* brain. Everything is reduced to its lowest common denominator, and that denominator is biology, and the rules of evolution which govern it.

My point is that Durkheim and Tooby/Cosmides are arguing over causality, and that the modern physician is likely to endorse the latter perspective, trained as she is in the biological sciences. Durkheim advocates a "Top-Down" model, in which external social realities determine individual psychology. Tooby/Cosmides favor a "Bottom-Up" one, in which individual biological forces determine culture. This debate, of the bottom-uppers against the top-downers, repeats itself endlessly in human thought about human nature. It can be seen in Mill (bottom-up) versus Marx (top-down); Freud (bottom-up) versus Jung (top-down); psychiatry (bottom-up) versus anthropology (top-down). And most generally, it is seen in the war between micro-reductionism (bottom-up) and holism (top down).

And the participants in the debate are well aware of their differences. They know their enemy, they disagree with their enemy, and they think he is wandering down the wrong garden path. In the most direct attack on the social sciences I have read, Tooby and Cosmides say:

The social sciences have been relatively unsuccessful as sciences. Although they were founded in the 18th and 19th centuries amid every expectation that they would soon produce intellectual discoveries, grand "laws" and validated theories to rival those of the rest of science, such success has remained elusive. The recent wave of antiscientific sentiment spreading through the social sciences draws much of its appeal from this endemic failure. This disconnection from the rest of science has left a hole in the fabric of our organized knowledge of the world where the human sciences should be. After more than a century, the social sciences are still adrift, with an enormous mass of half-digested observations, a not inconsiderable body of empirical generalizations, and a contradictory stew of ungrounded, middle-level theories

expressed in a babel of incommensurate technical lexicons. This is accompanied by a growing malaise, so that the single largest trend is toward rejecting the scientific enterprise as it applies to humans. We suggest that this lack of progress, this "failure to thrive," has been caused by the failure of the social sciences to explore or accept their logical connections to the rest of the body of science-- that is, to causally locate their objects of study inside the larger network of scientific knowledge."

-- [Tooby and Cosmides (1992) 20-23]

Durkheim, years earlier, defends himself thus:

The basic proposition that social facts are objective [and *sui generis*]... offends common sense. But science has encountered incredulity whenever it has revealed to men the existence of a force that has been overlooked. Since the system of accepted ideas must be modified to make room for the new order of things and to establish new concepts, men's minds resist through mere inertia. Yet this understanding must be reached. If there is such a science as sociology, it can only be the study of a world hitherto unknown, different from those explored by the other sciences. [Durkheim (1897/1951) p.310]

These two groups are, in academese, calling each other names. Tooby and Cosmides say that Durkheim and his kind have failed "to explore or accept their logical connections to the rest of the body of science -- that is, to causally locate their objects of study inside the larger network of scientific knowledge." Durkheim says that Tooby and Cosmides have failed to acknowledge the merits of holism, the possibility of emergent phenomena, and the *sui generis* world of culture, all of which are "hitherto unknown, different from those explored by the other sciences." The disagreement could not be more clear. Tooby and Cosmides think there is a causal chain linking culture to minds to brains to biology. Durkheim thinks there is not, and argues instead that there is a break in the chain where culture emanates full blown, like Athena from the head of Zeus, without any mechanistic preamble. It magically appears.

This debate, still a hot one in the world of academia, has important implications for the modern physician. To the extent that she believes there to be no discontinuity between the individual and society, she may implicitly believe that all the information she needs about her patient is contained in her patient; social forces can be derived from individual psychology. For this reason, it is important to understand whether any reasonable defense of Durkheim's contention that there are "social facts" -- which on the face of it seems dubious -- can be offered. I believe it can.

Emergence: The Missing Component of Micro-Reductionist Analyses

Recall the old philosophical joke that given all eternity, a monkey and a typewriter will produce the complete works of William Shakespeare. Put another way, meaningless events, every so often, might produce a profoundly meaningful narrative. But the likelihood of such a thing happening at any given time is minimal. In the same vein, the likelihood that a doctor staring at X-rays of a woman's degenerating finger-joints will observe in the pattern of disease a meaningful narrative – "a personal event" – is extremely small. This is because personal events only become probable at the level of the whole person. It is the whole person that makes narrative likely; in isolation, the parts of a person, like a monkey and a typewriter, are unlikely to tell much of a story at all. This may explain why many physicians have trouble thinking about meaning and narrative: it doesn't exist at the level of life towards which they direct most of their attention. It isn't their fault that they don't see meaning, personal events, and things that matter – the likelihood that this would jump out at them is infinitesimal. Only by engaging the whole person could they see things differently. And to that end, we need now to turn our attention to the idea of emergence, which gives a technical explanation for why we must look at wholes – rather than their component parts – in order to understand them.

Emergence is given various definitions, and is often conflated with the idea of supervenience and synergy; whether these connotations are legitimate is unclear to me. For our purposes, I want to define it as the idea that wholes exhibit causal powers or have properties that cannot be predicted from even the most thorough knowledge of their parts. One popular example of a supposedly emergent property is human consciousness, or mind. Mind exists at the level of the whole brain and not below; to reduce the brain into its component neurons is to delete the very property you are trying to understand.

This example often strikes critics as vague and assertive, because it is. Why can't the causal powers be predicted from a knowledge of the parts? Pressed, defenders of emergence may give a more specific example. Imagine an old fashioned wind-up wrist watch, they say. Now take it apart. Look closely at all of its gears. Look at the hands, the face, the spring. Now, pray tell, what time is it? Their point, of course, is that you can't say. You need the whole watch, working properly, in order to tell the time. Time *emerges* at the level of the whole. The hour hand, disconnected from the watch, cannot tell the time; just as a neuron, isolated from the brain, cannot think.

But these examples reveal the main flaw in many emergence arguments. They pretend that reductionists foolishly believe that *scattered* parts equal the whole. But this, of course, underestimates the critic. Reductionists know that it is *organized* parts that equal the whole. Reductionists are interested not only in parts, but in their connections to one another. Thus a reductionist would say that once the neurons of the brain are connected *just so*, you get consciousness. And once the gears of the watch are connected *just so*, you get the time. They are interested in the parts, and they are interested in the *just so* connections between them. Once these are described precisely, a complete reduction of the higher level phenomenon to its micro-phenomena will have been made.

Some defenders of emergence find this sort of reductionism to be unworkable. They say that a complete description of parts and their connections is impossible, practically – it would take too long, and the phenomenon to be explained would be lost in the morass of detail required to, for example, describe a watch atom-by-atom. [Garfinkel (1981)] But I think that this charge of impracticality is not a logically sound rebuttal to reductionism. Some day technology may make it practical.

There is, however, a legitimate attack against this position. As Ken Wilber has suggested, reductionism analyzes parts by *temporarily* cutting the connections between them. Freed from its context, the part becomes amenable to study – which is why the cutting occurs. The problem, according to this critique, is that this temporary disconnection *creates* misleading information. Specifically – and here is the core of the argument – *in isolation a part has many more degrees of freedom than it does when connected.*⁶ Its possible behaviors increase in isolation, while the probability that it is going to act in any particular way decreases. This being true, connections emerge as having crucial power over the parts they connect. [Wilber (1995) 54-57]

Taken to its logical conclusion, this idea indicates that the sum total of a part's connections determine the *total* probability that it will behave in a particular way. Which boils down to the idea that a whole

⁶ This idea is familiar to anyone who has studied enzymes. Catalytic sites, floating free in an aqueous medium, have a low probability of catalyzing a reaction because they are floating freely – and thus have many degrees of freedom. An enzyme, by connecting that catalytic site to a long, complexly folded chain of amino acids, drastically reduces its degrees of freedom. The site is now held in a precise position, as is its substrate. This precise positioning makes the enzymatic reaction highly probable. In this sense, the idea defined above describes quite well what happens in an enzyme; my suspicion is that this it applies equally well to many other biological processes.

determines the probabilities of its parts' behavior. In short, wholes sets parameters on behavior. To ignore wholes is thus to ignore parameters, and thus to mis-characterize parts.

This outlines the main defense of the idea of emergence, which, as I have implied, must be seen as an attack against reductionism. *If* it is true that wholes determine the probabilities of their parts behavior, and *if* it is true that these probabilities cannot be predicted without an understanding of the summed connections that produce them, *then* the reductionist assumption that connections can be temporarily cut in our efforts to characterize the part is flawed. Temporary disconnection endows the part with more degrees of freedom than, within the system, it normally has. Simultaneously, it robs us of the ability to know which freedoms the part will lose when re-connected. Connections alter parts, just as observers alter the thing observed, and to isolate them is to misunderstand them.

This idea could, however, be attacked as follows. While a perfect probability cannot be gained outside of embedding the part in a whole, can't we get close? In part the answer may come from the now "hot" field of chaos theory, which argues:

1. Probabilities can shift extremely rapidly, from low to high, as you cross a threshold.
2. Thresholds are sometimes impossible to locate before they are crossed

Many physicists – Rupert Sheldrake, Per Bak, and Stuart Kaufman among them – have tried to popularize these ideas, with the images used being those of sand-piles and auto-catalytic sets of enzymes, and the reader is referred to these for more detail on the arguments. [Kaufmann (1995)].

In the final section I will explore why emergence is important for our consideration of the doctor-patient relationship.

The Effect of Micro-Reductionism on Patients

We can now give two explanations for why patients might find micro-reductionism to be alienating. The first stems from the effect of physician's speech about micro-reductionism, the second from her failure (if indeed she does fail) to perceive the patient's emergent properties.

As explained earlier, when staring at sub-holons of their patients, doctors may not see narrative and subjectivity; this follows from the first component of reductionism, as defined above. But patients do not become aware of this deficit until their doctors talk, and this problem follows from the second component.

As noted earlier, the second component of reductionism pertains not to an analytical process, but to language. Reductionism holds that wholes can be described in terms of their parts.

Following this second tenet, doctors frequently think about people in terms of their organs, cells, molecules, and atoms. But the ordinary patient does not. Ordinary patients think of themselves in terms appropriate to narrative: they have a self which has purposes, meanings, will, and the like. People get depressed, not serotonin-deficient; people have hopes, not activations of the limbic system. But sometimes, when doctors talk with patients, they forget to “jump up” to the level at which most people dwell. The experience of being discussed in this way is, for some patients, quite shocking. “Where am I, the person I feel myself to be, in all of this discussion of cell counts and thyroid levels and viral replication rates?” The answer is that, for the doctor, they *are* these things. This *is* how the physician thinks of them. And this, in turn, is due to the reasons of reductionism outlined above.

The failure of physicians to perceive the emergent properties of patients stems from a simple fact: the level at which a micro-reductionist analysis commences is the least well characterized of all those levels examined. And, therefore, of all the levels of a human being, it is the whole person that the physician knows the least about. To understand this claim, we must first understand the theoretical statement, and then the factual one.

Consider once again a single holon.



In this case, the circle represents a human being. As we have seen, there are two directions in which we can move with respect to a whole person – we can plunge under the skin to find the parts within, or we can embed her in an ever widening series of contexts. In either case, we will be doing something to the surface of the whole, which translates graphically into the perimeter of the circle above. We will either break it, or connect it to other holons.

This in mind, realize that emergent properties occur at the surface of the holon – at the boundary between the holon and whatever larger context of which it is a part. Specifically, the individual’s probable behaviors are set by the holons (social, moral, etc.) of which she is a part. Thus to the degree that these

holons interact with her at her surface, and not below it, her behavior can be understood only when her surface, and its connections to the larger world, are understood.

But surfaces are apparent only when one is able to approach them from two sides at once. The problem with any reductionist analysis is now evident. The surface of the whole one begins with is invisible. By beginning at a surface and moving in, one never sees the surface itself. This is because in order to see a holon, an observer must be at least one holon higher.⁷ The corollary to this is, of course, that in a holistic analysis, the inside of the starting holon is also unknown – a point that is easier to grasp, but which does not concern us here.

To cash this in, realize that given 1) and 2) below, 3) follows:

- 1) Emergent phenomena are experienced at the surface of holons
- 2) Reductionist analyses cannot perceive the surface of the starting holon
- 3) Therefore reductionist analyses cannot perceive the emergent phenomena of the starting holon.

This sheds light on why some arguments on this subject are flawed. For example, Leibniz's point that a tiny man in my brain would never observe consciousness becomes obvious. Of course not! Emergent properties like mind are not readily evident at the level of individual neurons;⁸ they are seen at the level of the whole brain. The missing consciousness is neither proof against emergence (if you are a reductionist) or proof against reductionism (if you are an emergentist). It is, rather, to be expected given the nature of surfaces.

This theoretical consideration allows us to see why some physicians are poor at noticing phenomena that emerge at the level of the whole person. Because they begin at the skin and move downwards into parts, they fail to place their patients in a larger social context where these emergent phenomena would become painfully obvious.

What sorts of emergent phenomena are we talking about? In essence, we are talking about what the woman with rheumatoid arthritis referred to as "things that matter": personal events. Or in the language of this thesis, we are talking about illness narratives and subjectivity (consciousness). Narrative and

⁷ Or as a bastardized Kantian analysis might put it, holons are noumenal to themselves, and thus cannot observe themselves.

⁸ ...although our definition of emergence in Chapter 14 will show that mind alters the probability that a given neuron will act in any particular way. But probabilities are not easily seen at anything but the group level.

subjectivity emerge at the level of the whole person, and are apparent to observers when people interact with one another or with larger social systems. Both are excruciatingly difficult to notice at the level of organs, cells, molecules and atoms. Because such emergent properties are important to patients, it may be painful for them to find that their doctors do not pay them much heed.

We should note, in closing, that under this analysis it becomes irrelevant that doctors engage not only in reductionist thought with regard to organs, cells and molecules, but holistic thought as well. It is true that physicians connect patients' parts as often as they disconnect them; incessant tinkering with connections is what leads, eventually, to most medical cures. Our point is that *the limits of holistic thought, in the world of allopathic medicine, are set by the starting point of micro-reductionistic analysis*. Micro-reductionism defines the whole person as the starting point for medical analysis. Physicians then think down to parts, and sometimes all the way back to this starting point, the boundary of the individual. But if physicians rarely move beyond this starting point, they rarely see patients as embedded in larger social contexts. While of course doctors mention social context, it is rarely examined with the same intensity as is a blood count, or with the sophistication that an anthropologist might bring to bear. And as such, physicians are not particularly good at observing events at the surface of the self – narrative, meaning, consciousness. And this, to a large degree, is why the rheumatoid patient found herself saying “no one’s ever talked to me as if this were a thing that mattered, a personal event.”

Chapter 5: Meaning and Morality

In this final chapter I will propose a parallel between the problem of meaning, which I have addressed, and the problem of morality, which I have not. As we have seen, physicians employ several intellectual techniques that, if used without care, can result in a failure to adequately perceive meaning. This failure of perception may induce a failure of engagement with the patient, especially if the patient is sensitive. I believe there is an analog of this process at the societal level. Doctors, in their professional capacity, often resist perceiving moral phenomena. They are trained to provide care to all comers, be they Saints or thieves; this training has created a peer culture in which to spend prolonged periods of time discussing and analyzing moral phenomena is to be seen as idle or unproductive. But such a peer culture places doctors at risk of failing to develop the skills necessary recognize the intentions of moral systems. Thus where lawyers as a class, or politicians as a class, might easily perceive the implications of managed care, doctors have been relatively slow to do so. The problem, from the perspective of the physician's narrow self-interest, is that moral systems, unlike patients, have the power to affect daily medical practice at the systemic level. Thus where the doctor who fails to engage the meaning of illness alienates his patients one at a time, the medical establishment, to the extent that it fails to engage moral systems, robs itself of the capacity to analyze and manipulate these systems. So long as a peer culture persists in which moral activism is not respected, physicians will lack the discretion they seek in their interactions with patients.

This chapter will be divided into several sections. In 5.1 I will summarize the problem of the impersonal physician as the failure to perceive meaning. I will note that this may have negative effects on the patient, but is not generally considered by mainstream physicians to be an obstacle to effective health care. In 5.2 I will present an Octant system – a modified version of Martin Hollis and Ken Wilber's quadrant systems – which helps show the impersonal physician's perspective to be but one of eight viable approaches to thinking about the world, several of which are well suited to explore the world of meaning. To the extent that science seeks to collapse or reduce these other Octants into its own, Octant 1, it may become somewhat blind to the world of meaning. In 5.3 I will suggest that defenders of these other Octants often accuse Octant 1 of being ill-equipped to recognize moral

phenomena. I will note, however, that this feature of Octant 1 is frequently morally useful, when one's goal is to ward off moral interpretations of behavior. And in 5.4 I will note, following Paul Starr, that the failure of Octant 1 to perceive moral phenomena has a practical consequence: it renders those who subscribe to it relatively powerless in the face of powerful moral systems.

5.1 Failing to Perceive Meaning

We are now in a position to reevaluate our working definition of the impersonal physician:

An impersonal physician is one who fails to notice, or fails to communicate to patients that she notices, that disease is meaningful. As a result, patients experience such physicians as ignoring an essential aspect of their illness. They may feel that such doctors do not believe that illness "is a thing that matters, a personal event," and may even come to doubt the legitimacy of their own conviction that it is.

As noted in Chapter One, this definition hinges on the definition of meaning. Rather than define it, a difficult task, I will note that in my opinion meaning often involves one or more of these six characteristics:

1. Meaning is affected by time. It is affected both by the speed with which it is recognized, by the span of time separating the subject from the phenomena to which the meaning is ascribed, and by the relative position (past, present, future) of the phenomenon to the subject.
2. Meaning is something we experience, not something we observe, although meaning often relies upon our observations.
3. Meaning is immaterial, although it often concerns physical objects as well as metaphysical ones. This is because it occurs at the level of consciousness, which is immaterial.
4. Meaning often emerges when we perceive that two previously apparently disconnected phenomena are in fact connected. The more connections we believe a phenomenon to have to others, including other subjects, the more meaning it potentially has.
5. Meaning is related to the weight or importance ascribed by the subject to the phenomenon in question, or to the phenomena to which it is connected.
6. Meaning can be extrinsic, intrinsic, or both. Extrinsic meaning is apparent when the subject believes that the meaning existed prior to becoming known; most religious meaning has a strong extrinsic component. Intrinsic meaning is that which the subject believes did not exist prior to being observed, and which appears to be generated by the subject herself.

If these six characteristics are legitimate, they may show why the intellectual techniques of physicians are often seen as denying meaning. Number 1 above shows meaning often to rely upon teleology, numbers 2 and 3 show it to rely upon subjective experience, and numbers 4-6 show it to rely upon holism, which is to say, the forming of connections between phenomena. As I've sought to show in the previous chapters, many doctors employ intellectual techniques that screen out precisely these things.

Readers will doubtless be familiar with the argument that the denial of meaning interferes with proper medical care – for example, it denies physicians access to important information about compliance, or a dissatisfied patient has increased stress and lower immune function – and I will not recapitulate them here.

5.2 Ken Wilber, Modified: The Octant System

We have now seen that the impersonal physician prefers the grouping of *how*, objectivity, and micro-reductionism. This is not the only possible grouping of the six half-dichotomies. One obvious alternative is the grouping of *why*, subjectivity and holism, which is traditionally the purview of spirituality. However, there are many options in between, and two thinkers, the transpersonal psychologist Ken Wilber, and the British philosopher Martin Hollis, have independently constructed a quadrant system that shows the dichotomies of Chapters Three and Four to interact dynamically; this section is based on their work. [Hollis (1996), Hollis (1994), Wilber (1996), Wilber (1995)] Readers familiar with the quadrant system may skip to the end of this section, which will amend the quadrant systems with *how* v. *why*.

The best way to understand the quadrant system is as a way of conceptualizing approaches to human nature. In broadest outline, there are two crucial debates regarding this matter:

1. **Insider's Perspective v. Outsider's Perspective:** People disagree over methodology. Is human nature best understood from the "outside" or the "inside"? A rough dichotomization is this:

Figure 1: Methodology Dichotomy

Observe from the outside	Feel from the inside
Study the brain, nervous system, and endocrine system	Study the mind, self, and soul
Quantitative methodology	Qualitative methodology
Etic perspective	Emic perspective
Study neurons, DNA & biological structures, which have location in space and time	Study emotions, beliefs, moral codes, and value systems, which have no clear location in space or time
Neurobiology, cognitive psychology, biology, chemistry	Personality psychology, psychoanalysis
Attempts to meet Karl Popper's standards of falsifiability and reproducibility	Does not hold itself to the hard sciences' standards of falsifiability and reproducibility
Its methods are denounced by opponents as "reductionistic"	Its methods are denounced by opponents as "teleological"

2. **Individual v. Society:** People disagree over whether the human mind is a product of culture, or whether culture is a product of the human mind. That is, they argue about causality. In which direction does the causal arrow point?¹

Culture → Human nature
or
Culture ← Human nature

A rough dichotomization of the causality debate is this:

Figure 2: Causality Dichotomy

"Biological determinism"	"Cultural determinism"
Culture is an expression of individual psychology writ large. Human nature is the cause, culture is the effect.	Individual psychology is an expression of culture writ small. Culture is the cause, human nature is the effect.
Culture ← Human nature	Culture → Human nature
J.S. Mill: "Human beings in society have no properties but those which are derived from, and may be resolved into, the laws of nature of individual men."	Marx: "It is not the consciousness of men that determines their being but, on the contrary, their social being that determines their consciousness."
Other thinkers: E.O. Wilson, Tooby and Cosmides, Melvin Konner, Konrad Lorentz, Noam Chomsky	Other thinkers: Clifford Geertz, Emile Durkheim
Cognitive psychology, Biology	Anthropology, Sociology, "political correctness,"

As both Hollis and Wilber note, these two dichotomizations create a 2x2 grid (see Figures 3 and 4, below) onto which most studies of human nature can be mapped. On the y-axis is the "causality dichotomy." If a person believes that culture determines human nature, she will understandably devote most of her effort to understanding and explaining society, on the assumption that once it is understood, the rules of individual human nature can be derived from the results. This approach might be dubbed "focus on culture." Alternately, if a person believes that human nature is largely genetically or biologically determined, she will "focus on the individual," assuming that the structure of society can be derived from the results.

¹ Of note is that the intermediate option, Culture ↔ Human nature, while initially appealing, explains nothing given our starting assumption that culture and human nature are distinct (an open question!). The distinction between culture and human nature disappears if this third option is taken seriously, which in turn would preclude the discussion. Thus I suggest that, regardless of its truth, the dichotomy is a useful

On the x-axis is the “methodology dichotomy.” If a person seeks understanding through objectivity and empiricism (traditional goals of the so-called “hard sciences”) she will seek to “explain from an outsider’s perspective.” Her methodology will probably involve measuring and locating objects (dopamine, neurons, churches, etc.), correlating the behavior of certain objects with the behavior of other objects, and deducing the mechanism by which objects in one configuration take on a new configuration. That is to say, how much dopamine is present in the hypothalamus when someone is smoking a cigarette? Alternately, if a person seeks understanding through subjective understanding and empathy, she will seek to “explain from an insider’s perspective.” Her methodology will probably involve participant observations, interviews, and attempts to deduce the meaning of behavior. That is to say, what does smoking mean to a smoker, and to the smoker’s friends?

There are many ways to fill in such a table. For starters, four fields traditionally associated with the study of human nature – sociology, anthropology, psychoanalysis, and cognitive neuroscience – can be mapped onto the grid. Experts in each field would reject this assertion, but there is, I believe, a grain of truth to it.

Figure 3: Representative Fields

	Explain from an Outsider’s Perspective	Explain from an Insider’s Perspective
Focus on Society	Sociology	Anthropology
Focus on the Individual	Neurobiology	Psychoanalysis

way of conceptualizing approaches to human nature, and thus one of the two above is usually assumed in academic work, despite lip-service to its inverse.

A more rigorous description might be this:

Figure 4: Synopses

	Explain from an Outsider's Perspective	Explain from an Insider's Perspective
Focus on Culture	Quantitatively study society: Describe it by looking at it. Create mathematical models and statistical descriptions of social trends, in an effort to predict outcomes.	Qualitatively study culture: describe it by learning the meanings people attribute to social roles and rules. Enumerate the cultural mores and norms that govern behavior.
Focus on the Individual	Quantitatively study the brain: describe it by looking at it. Conduct scientific experiments in an effort to come to a better medical understanding of behavior.	Qualitatively study the mind: describe it by learning the meanings that motivate behavior. Enumerate the psychological principles that govern behavior.

Several points follow from the foregoing. The first is that “culture v. the individual” is analogous to “nurture v. nature,” and both are examples of “whole v. part.” Extrapolating from the quadrants, we can say that methodologically, the terms “holistic” and “reductionistic” could justifiably be the terms for the two rows of the grid above. Second, “outsider v. insider” also has analogs, in “etic v. emic” and “quantitative v. qualitative.” Moreover, we could just as easily substitute “objective v. subjective” for these two terms.

The second is that the central value of the quadrants is to show that there are four possible distinct worldviews produced by the cross-tabulation of the dichotomies “subjective v. objective” and “holism v. reductionism.”

The third is that the impersonal physician clearly belongs in the lower left quadrant. She focuses on the individual, and on individual portions of the individual – she dissects the person into his organs, the organs into their lobules, the lobules into their cells, the cells into their molecules. She dissects life into physiology, physiology into biochemistry, biochemistry into physics, and physics into math. Thus the more adamantly medicine clings to this approach, the further estranged it becomes from fields such as anthropology and psychology, which focuses on the subjective, holistic world.

In the spirit of Hollis and especially Wilber, who is deeply interested in the question *why*, I want to suggest that we amend the quadrant system with the third dichotomy at the heart of this paper.

Adding How v. Why

Because it is difficult to graph a cube, I would ask the reader to imagine that the quadrant system above is duplicated, with the original referring to the question *how* and the duplicate to the question *why*. Ideally, the two halves would be adjacent, with the eight resulting sections forming a cube. Independently, the two halves look like this:

<i>How? – Searches for Mechanism</i>		
	<i>Objectivity</i>	<i>Subjectivity</i>
<i>Holism</i>	3	4
<i>Reductionism</i>	1	2

<i>Why? – Searches for Meaning</i>		
	<i>Objectivity</i>	<i>Subjectivity</i>
<i>Holism</i>	7	8
<i>Reductionism</i>	5	6

Note that the eight quadrants have been labeled 1-8. Throughout this discussion they will be referred to as “Octant 1” through “Octant 8.”

According to our definition, disassembly is synonymous with Octant 1. It combines a concern for the question *how* with objectivity and reductionism. Accordingly, this leaves seven other octants, representing seven alternative worldviews. A brief characterization of each may prove helpful.

- **Octant 1: Disassembly.** Observers disassemble wholes to see the mechanisms by which they work. A neurobiologist might take apart a person’s brain, or use PET scans to understand behavior.
- **Octant 2:** Subjects self-disassemble (or observers enter into an inter-subjective relationship, as in psychotherapy, in order to aid in disassembly) to see the mechanisms (id, ego, superego, etc.) by which they work.
- **Octant 3:** Observers place parts into larger contexts, in an effort to see the mechanisms by which they interact. A sociologist might map demographic trends in an effort to predict voting behavior.
- **Octant 4:** Subjects place themselves in larger contexts (or observers, such as anthropologists, enter into the group through participant-observation, in order to read the social norms of the group from the inside) in an effort to see the mechanisms by which the whole functions.
- **Octant 5:** Observers tell stories about the observed in an effort to make that behavior meaningful.² Often called “third person narration.”
- **Octant 6:** Subjects tell stories about themselves in an effort to make their experience of the world meaningful. Often called “first person narration.”
- **Octant 7:** At the extreme, observers seek to tell stories about the whole of creation, in order to make it meaningful. They, themselves, are held as separate from creation. This Octant is the home of “organized” or ideological religion, which employs a form of third person narration called “creation myths” often found in religious texts such as the Bible,

² Note that “meaningful” here does not mean “mechanistically explicable,” but meaningful in the emotional sense. It is important to note that throughout this thesis I have not defined “meaning,” because it is an intensely difficult concept to understand. How, exactly, is meaning different from understanding? Neurobiologists might suggest it has to do with the degree of limbic system activity during thought; psychologists might say it pertains to affect. I am interested in developing a more technical or theoretical model of what happens when something appears meaningful. My sense is that meaning rises in direct proportion to the number of indirect connections a given idea has to other ideas or memories in the mind. This is something I would like to think about a great deal more.

- **Octant 8: *Spirituality*.** Subjects tell stories about all of creation. Because creation is continuous with the subject – there is no distinction, in the story, between the story-teller and the narrative, the story itself is constantly subsumed by the creation it purports to describe. Efforts to narrate break down, and it soon becomes apparent that creation *is* the story. It is from the collapse of efforts to hold the ego separate from the rest of creation that spiritual experience emanates. [Nishitani (1982)]

It is important to note that these characterizations are, due to their brevity, incomplete, but should serve as niduses upon which to build more complete descriptions. Further, note that Octants 5-8 are not as distinct as 1-4, because each relies upon narrative, and narratives, being definitional in nature, can include any object of thought they desire. Thus the boundaries between 5 – 8 are easily breached by the narrator. Finally, note that only Octants 1 and 8 have been labeled, the first as “disassembly” and the last as “spirituality.” This corresponds to the ancient rift between Athens and Jerusalem, reason and faith, or as we have called them, mechanism and meaning. These two octants are, in a sense, the most ambitious of the eight, seeking to understand all of creation, but from entirely different directions. Disassembly sees creation as an enormous clockwork mechanism, explicable in terms of its smallest parts, meaningless because of its reliance upon two meaningless processes – chance and necessity. Spirituality, alternately, sees creation as an indissoluble whole, intensely meaningful, and utterly inexplicable. Hierophanies – eruptions of the sacred into the profane word – can in some ways be understood as eruptions of Octant 8 out of Octants 1-4 [Eliade (1957) 11] Of further importance is the understanding that spiritual experiences utterly defy explication – they are *experiences*, in the true sense of the word. Dissectionist triumphs, alternately, are easily described; indeed, they are reliant upon human insight.

On a final general note, few people confine themselves to one particular Octant. I suggest the Octants be seen as a field upon which one moves, intellectually, when thinking about the world, and that some people gravitate towards certain areas of the field in preference to others.

In summary, we have seen that disassembly is merely *one* way of looking at the world, and to the extent that worldviews can be neatly boxed and labeled, there appear to be eight distinct ones generated by the three dichotomies discussed in Chapters 2-4. Further, as numerous examples from Chapters 2-4 indicate, there is in science a general trend towards collapsing Octants 2-8 into Octant 1. In Tooby and Cosmides’ attack on Durkheim, in Dawkin’s attack on Creationism, in Churchland’s attack on the privacy of subjectivity, and in Gould’s attack on narrative and purpose we have seen this collapsing impulse. Further, throughout this paper we have alluded to intellectual efforts to protect these Octants from attack, which I

have portrayed as an effort to defend meaning. I want now to suggest that there are many other motivations; among them is the conviction that Octant 1 is prone to dangerous amorality.

5.3 Meaning and Morality

Moral phenomena are definitional, immaterial, and collective, three traits that scientific thought finds relatively distasteful, and thus it should come as no surprise that there is currently a movement afoot, especially in the fields of ethology, evolutionary psychology, evolutionary biology, and cognitive neuroscience, to reconceive morality in biological terms. To give but a single example:

The creature must configure its synaptic weights within some special neuronal populations so as to represent the structure of the social reality in which it lives. Further, it must learn to generate vectorial sequences that will produce socially acceptable or socially advantageous behavioral outputs. As we will see in what follows, social and moral reality is also the province of the physical brain. Social and moral cognition, social and moral behavior, are no less activities of the brain than is any other kind of cognition or behavior. We need to confront this fact squarely and forthrightly if we are ever to understand our own moral natures. We need to confront it if we are ever to deal both effectively and humanely with our too-frequent social pathologies. And we need to confront it if we are ever to realize our full social and moral potential. Inevitably, these sentiments will evoke discomfort in some readers, as if, by being located in the purely physical brain, social and moral knowledge were about to be devalued in some way. [Churchland (1995)124]

While I agree with Churchland, his approach raises an interesting *practical* question. If, as scientists, we embark upon a decades-long effort to “locate” moral phenomena in the brain, must we not focus quite intensely on the individual in our effort to do so? As Churchland notes, this may cause us to stop perceiving moral phenomena in the way that most people – politicians, judges, businesspeople – do. But if this is so, may we not, as a result of our reductionism, create a peer culture in which it becomes difficult to talk, in one’s professional capacity, about morality as it is experienced by others? And if so, does this not place us at a disadvantage when seeking to respond to moral forces appropriately?

This is precisely the claim of some critics. It frequently emanates, in my own experience, from the social sciences. Such critics almost invariably champion one of Octants 2-8. The following excerpt from a 1995 text, *An Introduction to Social Constructionism*, illustrates the theoretical underpinning of this position as it is known to Octant 4; its consequent charge of immorality will be discussed momentarily:

Social constructionism insists that we take a critical stance towards our taken-for-granted ways of understanding the world (including ourselves). It invites us to be critical of the idea that our observations of the world unproblematically yield its nature

to us, to challenge the view that conventional knowledge is based upon objective, unbiased observation of the world. It is therefore in opposition to what are referred to as positivism and empiricism in traditional science – the assumptions that the nature of the world can be revealed by observation, and that what exists is what we perceive to exist....

The ways in which we commonly understand the world, the categories and concepts we use, are historically and culturally specific.... This means that all ways of understanding are historically and culturally relative.... We should not assume that *our* ways of understanding are necessarily any better (in terms of being any nearer the truth) than other ways....

It is through the daily interactions between people in the course of social life that our versions of knowledge become fabricated. Therefore social interaction of all kinds, and particularly language, is of great interest to social constructionists.... Therefore what we regard as 'truth' (which of course varies historically and cross-culturally)... is a product not of objective observation of the world, but of the social processes and interactions in which people are constantly engaged with each other. [Burr (1995) 4-5]

In these paragraphs, Burr gives voice to a popular academic and political stance: everything is relative. Nothing is 'true.'³ The Enlightenment project was wrong: there is not a 'real' noumenal world 'out there' waiting to be discovered. On the contrary, we project onto the world a set of more or less arbitrary (historically contingent) frameworks that determine how we see it.

As Allan Bloom and other critics of social constructionism have noted, this academic stance is inextricably tied to a moral one.

There is one thing a professor can be absolutely certain of: almost every student entering the university believes, or says he believes, that truth is relative.... The relativity of truth is not a theoretical insight but a moral postulate, the condition of a free society, or so they see it. [Bloom (1987) 25]⁴

The fusion of social constructionism with morality will be familiar to most readers, as is the idea that its enemy, biological determinism, is potentially immoral. Familiar also will be the problem it raises: in an effort to promote morality, we may be led to fight against the intellectual techniques outlined in this paper.

For example, I recently gave a lecture to a class of Berkeley freshmen on Wilber's quadrant system presented above, and was confronted, immediately afterwards, by a visibly upset PhD candidate in cultural anthropology who told me "your social science is *bullshit*." I invited her to give a lecture in response, and two weeks later she put the same quadrants on the board, drew an enormous circle around all of them, and told the class "all of these are just ways of seeing the world." She had, evidently, mistaken my willingness

³ With, of course, the obvious exceptions: the statement 'everything is relative,' isn't, and 'nothing is true,' is.

to use the quadrants as a heuristic tool for an ontological statement. She went on to explain why she felt my position wasn't merely wrong, but immoral; as her lecture notes put it:

Biologically reductionist explanations of gender, much like biological explanations of race, have always been used in the U.S. to explain and legitimize situations of extreme social inequality.... Biological reductionism is a dangerous way of thinking, because it ultimately suggests we have no free will, no ability to change or shape our own fates or the societies we live in. If anthropology and history show us anything, however, it is that diversity is the rule and change is always possible – if human beings make the effort, *and* the systemic conditions are right. [Murray (1998) 17]

These fears are well founded; what marks her position as potentially problematic is the penultimate sentence, which implies that biological reductionism should be avoided “*because* it ultimately suggests we have no free will, no ability to change or shape our own fates or the societies we live in.” [Italics mine]. But ought we really be willing to reject a mode of intellectual inquiry on the basis of its moral failings? Is this not the inverse of Bertrand Russell, Daniel Dennet, Stephen Jay Gould’s willingness to reject religious thought on the basis of its scientific shortcomings? Ought “free will” and other moral concepts not be subject to scientific scrutiny?

Furthermore, I would note that there is more than a little hypocrisy to this position. Octant 1 is routinely used by people to “excuse” certain behaviors from moral censure. The argument that homosexuality is genetic, for example, is widely used to excuse gays from moral censure. But is not this a morally driven use of amorality? In general, I would suggest that Octant 1 has long been used to justify the exclusion of particular “biological” groups (Jews, African Americans, the mentally retarded) from moral systems. Sometimes those moral systems provide benefits, and so the group will insist that Octant 1 not be applied to them. But when, as with homosexuality, the moral system is oppressive, Octant 1 will provide refuge. My sense is that rather than stressing amorality, Octant 1 stresses one particular brand of morality: libertarianism. In severing connections – between subjective and objective, between parts and wholes – it promotes the autonomy and freedom of the phenomena it examines. Thus Octant 1 is best seen as championing agency (freedom, rights, the individual) over communion (equality, responsibility, the group).

The point, however, is that regardless of how Octant 1 is used, it is generally perceived as amoral because it has difficulty recognizing or even thinking about morality. This helps explain in part why

⁴ Burr, of course, would argue with Bloom – the relativity of truth, for her and many social constructionists, *is* a theoretical insight tied to a moral one.

doctors are routinely censured for refusing to treat patients who have committed immoral acts: as proponents of Octant 1, they are expected to screen out the very problems that legal and religious systems are designed to address.

5.4 The Downside of Amorality

Moral systems are sustained by moral agents. And moral agents require the sanction of moral systems if their values are to be taken seriously by others. Thus moral agents and moral systems are engaged in a symbiotic relationship.⁵ To the extent that physicians and patients are moral agents, and to the extent that the doctor-patient relationship is judged sacrosanct for moral reasons (rather than empirical ones), doctors place themselves at a serious disadvantage when they fail to perceive that they rely upon the patronage of a larger moral system. If they can't see the system that sustains them, they can hardly be expected to recognize when that system is endangered by a rival one. Indeed, some critics of the ongoing revolution in health care delivery believe that it is moral blinders that help explain physicians' failure to recognize the threat posed by managed care, and failure to organize in an effort to fight against it. [Schultz (1997)]

A sophisticated presentation of this idea can be found in Paul Starr's influential *The Social Transformation of American Medicine*. Starr portrays the American Medical Association (AMA) as seeking, since its inception in 1846, to keep third parties from interfering in the doctor-patient relationship. [Starr (1982) 90] In particular, the AMA fought a war on two fronts. On the one hand was the government, which sought to regulate practice largely at the behest of labor unions and the lower middle class. On the other was the private sector, which saw in medicine an opportunity to make money. In Starr's portrait, the government responded to moral and political arguments against interference set forth by the AMA, such as the claim that regulation was tantamount to socialism, while the private sector responded to economic weapons. The AMA, by denying admitting privileges to group practices, by using Boards to deny licensing to groups, and by fighting wars against the "quackery" of what we today call "alternative medicine," was able for much of the 20th century to stave off private sector interference. In Starr's portrait, the AMA never lost a single battle against the government, largely because the government, a moral

⁵ It is sometimes said there are three types of symbiosis – mutualism, commensalism, and parasitism. Mutualism occurs when both organisms benefit, commensalism when one benefits and the other is neither

regime, responded to the moral arguments set forth. The private sector, alternately, patiently chipped away at AMA control of medical practice until, as we now find in the 1990s, it was firmly in control of the doctor-patient relationship.

Reading Starr's book, one cannot help but see as tragic the AMA's failure to consciously realize what its tactics bespoke: that capitalism does not respond to moral arguments, while government does. Had this been perceived, it would have been obvious that because doctors had a long-term interest in protecting a moral right – the right to doctor-patient confidentiality and autonomy – they ought to choose to live under the auspices of the moral regime. Failing to realize this, the private sector assumed control of medicine. And soon enough most every aspect of practice – including the doctor-patient relationship – became subject to manipulation if, in the eyes of capitalism, such manipulation might yield increased profit. As noted at the start of this paper, one noteworthy manipulation has been the reduction of time allotted to doctor-patient visits. This time crunch has compounded the problem of the impersonal physician; but what I have just suggested is that it is an expression of the problem. The rushed physician has, through inattention to the moral world, created her own reality, or rather, has surrendered that power to moral systems whose bottom line is efficiency.

The irony in all this, of course, is that an ostensibly amoral system such as medicine should be taken over by another ostensibly amoral system, capitalism. Both being unconscious of their shared tendency to promote autonomy and freedom in the search for efficiency, they make a perfect pair. And the moral, if there is one, is that the problem of the impersonal physician is a problem not only for patients, but for physicians themselves. Perhaps in the coming decades doctors will create a new peer culture that is interested in the behavior of moral systems. As a byproduct they may amend the intellectual techniques that contributed to the problem in the first place, and this may allow them to more easily explore the world of meaning with their patients.

But should this happen, an entirely new danger will arise. Physicians, given incentives by managed care companies, may come to use empathic connections with their patients as a means by which to steer them away from costly medical interventions. This misuse of empathy, and the pursuit of meaning, would certainly be in keeping with trends in post-industrial capitalism. After all, one of the signal realizations of

harmed nor helped, and parasitism when one benefits at the other's expense. Symbiosis is often used to

the age is that “empathy pays.” To empathize with consumers – to understand how they think so well that it becomes possible to alter what they want – is to profit. Empathy, commonly perceived as an altruistic trait, is, in the hands of many corporations, used cynically to market products; there is little reason to think things will go differently with managed care. But what an ironic twist this would be: we may soon see a transition from a medical system in which patients are cared for but don’t feel it to one in which they feel cared for but aren’t. Some critics believe that this is already in the process of happening. Were Robert Boyle alive today, he might well note that it was against precisely this sort of problem that early Enlightenment science fought so bravely.

mean mutualism, and it is in this sense that I employ the term.

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