POSTSCRIPT #2

Who Needs Free Will?

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In 2011 researchers published a study of judges overseeing more than a thousand parole board decisions. Summarizing this study, neuroscientist Robert Sapolsky informs us that "what best predicted whether a judge granted someone parole versus more jail time" was "how long it had been since they had eaten a meal". The figures were startling. The likelihood of a decision for parole soon after a meal was 65 percent; a few hours after a meal, close to 0 percent. Subsequent research showed that judges give 15 percent lighter sentences if it's the defendant's birthday. Sapolsky believes that if we want to understand what's really going on in such cases and in human behavior generally, we need to look at the brain's pre-frontal cortex (Sapolsky 2023, pp. 106-7; 454-55n28).

It requires a bold (or reckless) soul to venture upon a discussion of free will in today's world — a time when every aspect of the question of freedom seems so difficult to frame in terms of contemporary thought. The boldness (or recklessness) is all the more in evidence when, being an acclaimed neuroscientist like Sapolsky, you undertake the venture in a book aggressively titled, *Determined: A Science of Life without Free Will*. He might equally well have chosen (if only he *could* have chosen) the subtitle, "A Science of Life without Moral Responsibility" since that, too, is very much part of his case. And among his overall conclusions is this: "We need to accept the absurdity of hating any person for anything they've done; ultimately, that hatred is sadder than hating the sky for storming, hating the earth when it quakes, hating a virus because it's good at getting into lung cells" (p. 403).

Most of us could agree that hate in any form is a fruitless and unhealthy thing, despite the lamentable tendencies of our own nature. Further, if we accept the burden of moral responsibility, and if understanding the unrecognized springs of our own activity is a major part of that responsibility, then there is a great deal we can gain from Sapolsky's book. One thing he accomplishes is to show us that the challenge in understanding the truth of our own activity is far deeper, and far more extensively rooted in the past — even if only in our last meal — than we might have imagined.

The problems we encounter in reading Sapolsky's book begin when we find him claiming the

authority of science for his materialist convictions. If we steer clear of those convictions in the way the world itself asks us to, we are led to radically different conclusions from those he embraces.

Actually, it's not even clear what the point of the book is — and not only because Sapolsky never clarifies what he means by either free will or determinism. Since his materialistic starting assumptions disallow the very idea of choice (as opposed to our being pushed around by material impacts), there can hardly be any substantive discussion relating to the title of his book. He never looks closely at the actual meaning of choices in individual lives. His main concern seems to be with those material impacts, especially in the pre-frontal cortex. All the questions have been dispensed with by his own predisposition before the discussion starts, and he shows no interest in addressing or even acknowledging the fundamental problems raised by that predisposition.

The best we can do with Sapolsky's book, I think, is to contextualize the abundant research results he presents — doing so in a way that avoids both the materialistic tendentiousness of his book and a too-casual disregard of the constraints of our material embodiment. That is what I would like to attempt. My thesis, then, will be this:

> Sapolsky's central focus on free will is a confusing distraction, first, because he does nothing to clarify what he means by that term; and, second, because it's hard to see how the rather obscure idea of freedom could carry us to the heart of the problems involving will, intention, and choice. The deeper question has two sides: (1) to what extent do we have the power to place the imprint of our own meanings upon our actions? and (2) what is the relation between this power and the physical lawfulness and predictability of the physical world? Sapolsky totally misses the overwhelming evidence for a positive and non-conflicting relation between our meanings and intentions, on one hand, and our physicality, on the other.

But before we proceed further, we need a fuller grasp of Sapolsky's manner of reasoning toward a conclusion he considers radically deterministic.

Sapolsky's argument

As part of his case for the determination of individual destinies, Sapolsky asks whether we know enough about the roots of individual behavior to be fully sure of the determination. His answer:

> We know that every step higher in an Adverse Childhood Experience score increases the odds of adult antisocial behavior by about 35 percent; given that, we already know enough. We know that your life expectancy will vary by thirty years depending on the country you're born in, twenty years depending on the American family into which you happen to be born; we already know enough. And we already know enough, because we understand that the biology of [the brain's] frontocortical function explains why at life's junctures, some people consistently make the wrong decision. We already know enough to understand that the endless people whose lives are less fortunate than ours don't implicitly "deserve" to be invisible (p. 403).

Sapolsky recites a number of capsule histories, such as that of epilepsy. Major seizures, he tell us, were long regarded (going back to ancient times) as expressing demonic possession, to which the

subject was often thought to have been responsible for opening himself up. Then there was schizophrenia, blamed on “schizophrenogenic mothers”; and autism, supposedly (as far as much of the psychiatric profession of fairly recent times was concerned) caused by “refrigerator mothers”. But in these and other cases the findings of science have slowly and inevitably changed our perception of causation and blame. His conclusion: the more we understand biology, the less we can make moral judgments about the people involved.

His claims about the futility of judgment — which harmonize, as we will see, with an older wisdom — may be the most important part of the book. But the issue is not primarily biological. Rather, the difficulty for our understanding is the difficulty of assessing the deepest and most meaningful interior depths of a human life.

As a neuroscientist, Sapolsky pays closest attention to the virtually infinite number of pathways along which the brain and its neurons can proximately figure in behavior. But he also reminds us that there are many more remote influences on our behavior, including a pregnant woman’s exposure to pesticides, the cultural environment and its provision (or not) of rich, healthy, stimulating surroundings for the growing child, and the evolution of genes millions of years ago. The routes that pathological influences can take are endlessly diverse and often unsettlingly common. Just about everyone could benefit from reading the author’s recounting of the wildly diverse factors playing into human behavior. There is little doubt that we might find ourselves a lot more compassionate and a lot less judgmental if we truly reckoned with the biological, cultural, and other factors underlying the things people do.

If there is a single, central (and problematic) theme of Sapolsky’s book, underscored countless times, it is the seemingly trivial one that a behavior happens “because something that preceded it caused it to happen” (p. 2). “Why did that behavior occur? Because of events one second before, one minute … one century … one hundred million years before” (p. 3):

> No matter how thinly you slice it, each unique biological state was caused by a unique state that preceded it. And if you want to truly understand things, you need to break these two states down to their component parts, and figure out how each component comprising Just-Before-Now gave rise to each piece of Now. This is how the universe works (p. 125).

And again:

> The reality is that whether you display admirable gumption, squander opportunity in a murk of self-indulgence, majestically stare down temptation or belly flop into it, these are all the outcome of the functioning of the pre-frontal cortex and the brain regions it connects to. And that PFC functioning is the outcome of the second before, minutes before, millennia before (p. 123).

Sapolsky is deeply impressed by the thought that all the sciences dealing with all aspects of the world present us with an interlocking, consistent, inclusive, seemingly airtight narrative of why things happen.

This picture of an unbroken chain of causes “over which we have no control”, stated in the very first pages of his book and repeated in one form or another countless times, is just about the full extent of Sapolsky’s analysis of the meaning of his single-word title: “Determination”. Whatever this determination amounts to, he opposes it to decisions of will understood as “causeless causes” (pp.

2-3, 201). That phrase, self-contradictory and never explained, is equated by Sapolsky with free will. Why? What could a “causeless cause” possibly be? So far as I can see, he never explains the usage, which seems to be simply his way of defining freedom out of existence.

In a book whose whole purpose is to dispute the idea of free will, it is strange that he has very little to say about exactly what it is that he is disputing.

Of sea slugs and humans

Sapolsky spends part of a chapter describing a reflex in the sea slug. If you touch the slug next to its gill, the gill contracts — for a while. Then, under the usual circumstances, it relaxes back to its prior state because it *needs* the gill to be functioning. But, under some circumstances such as repeated touching, the gill may retract for a longer period. It’s all fairly simple and straightforward, and Sapolsky describes an arrangement of a few neurons that is, in principle anyway, supposed to represent the reflex.

We’re told that we are looking at “a machine on both the level of neurons communicating with each other in a circuit and the level of chemical changes inside a single key neuron. This is a machine that is entirely mechanistic in biological terms and that changes adaptively in response to a changing environment”. Machine, circuit, mechanism — these are the terms of the author’s understanding of reflex biology, which, in a great leap, is seen as the basis for all behavior. It’s an extraordinarily reductive understanding of the biological world, but Sapolsky nevertheless defends its applicability to humans: “We are unimaginably more complex than an *Aplysia* [sea slug] but are biological machines with the same building blocks and the same mechanisms of change”.

In fact, “pretty much the same thing goes on in us [as in the sea slug] when we have become the sort of person who would pull a trigger, or run into a burning building to save a child, or steal an extra cookie … The circuits and molecules of the *Aplysia* are all the building blocks we need to make sense of behavioral change in us” (pp. 278-79).

This effort to reconceive all human behavior on the model of a reflex is stunning — something I imagine no one but a neuroscientist would be naive enough to attempt. But it’s worth pausing a moment to consider whether even the simplest reflex is quite the kind of mechanism Sapolsky describes. Here’s a very different description by one of the great neuroscientists of the twentieth century, Kurt Goldstein:

> Human beings are able, by assuming a special attitude, to surrender single parts of their organism to the environment for isolated reaction. Usually, this is the condition under which we examine a patient’s “reflexes” … But [regarding the pupillary reflex] it certainly is not true that the same light intensity will produce the same contraction when it affects the organ in isolation (as in the reflex examination) and when it acts on the eye of the person who deliberately regards an object … one only needs to contrast the pupillary reaction of a man looking interestedly at a brightly illuminated object with the reaction of an eye that has been exposed “in isolation” to the same light intensity. The difference in pupillary reaction is immediately manifest. (Goldstein, 1995, p. 144).

In other words, we cannot understand reflexes except as acts of the whole person — a very different matter from trying to understand the person as the product of his or her reflexes. But the simplistic argument from reflexes is evidently all that Sapolsky thinks he needs in order to make his case regarding the "mechanisms" he imagines as underlying all human behavior. In particular, he never considers the absolutely critical problem of the relation between purposive, meaningful activity, on one hand, and causal physical interactions, on the other — a main concern of my discussion below.

It's not clear how the mechanistic conception of a reflex, whether in a sea slug or in us, connects in the slightest with our understanding of the cognitive or aesthetic sensibilities or the physiological performances of an artist or pianist or novelist or scientist. The ignoring here of thought and other *interior* capacities is truly remarkable. But one gets the feeling that such considerations simply don't register in the intellectual landscape of someone trained in the neuroscience of our day.

The closed circle of the reflex — the movement from here to there and back again — seems difficult for Sapolsky to escape as a universal and deterministic picture of living activity. He just can't see where human meaning could possibly be hiding in that circle. And he never asks whether this could have anything to do with the fact that the science giving us the circle was ferociously opposed to any mention of meaning — and committed to its elimination from science — before the physiological investigation of reflexes had even begun.

The pivotal point of the book's argument is that we're looking at "a seamless arc of influences bringing your pre-frontal cortex to this moment, without a crevice for free will to lodge in" (p. 123). Or, as he says elsewhere: when we add together all the different sciences dealing with things that influence us, "There's not a single crack of daylight to shoehorn in free will" (p. 9).

Supremely confident of his subject matter, Sapolsky affirms over and over that "we are nothing more or less than the cumulative biological and environmental luck, over which we had no control, that has brought us to any moment". He immediately adds: "You're going to be able to recite this sentence in your irritated sleep by the time we're done" (pp. 3-4).

He may be right, at least about the irritation. And we need not quarrel about how vitally important it is for us to become aware of the influences working upon us from the past. These probably go far beyond anything most of us manage to keep in mind.

Awareness of such things is one way we actually *enlarge* our sphere of moral responsibility. Any judge who has reckoned with the research on judicial decisions mentioned above will no longer be quite the same judge, and will have gained an element of meaningful and responsible choice that did not previously exist — all of which constitutes a dimension of our lives that Sapolsky does not seem very interested in discussing. It may be that expanding the domain of meaningful choice in this way is one of the primary challenges for our wills and for our sense of moral responsibility today.

In what remains of this review I would like to articulate several points showing how part of Sapolsky's argument can be confirmed out of existing ethical traditions, while also suggesting how he might have turned that argument in a very different direction if only he could have risen above the materialistic creed of contemporary science, just as our culture has risen above some of the

superstitions of our past.

The impossibility of accurate blame

Most of us have heard the saying, “Judge not, lest you be judged”.[1] This has often been taken by Christians as another commandment simply to be “obeyed” (or not). Unhealthy as this substitution of authority for understanding is in general, I have always thought it peculiarly unapt for this particular saying. (Where exactly would the wrongness of judgment lie, if we were capable of judging wisely and in truth?) Surely, I have thought, we are advised to avoid judgment, not because it is yet another sin to watch out for, but simply because it is *impossible* for us to judge rightly — and this for all the reasons Sapolsky cites, if not others as well. The truth of the question of personal responsibility is just too deep and obscure to penetrate.

We cannot reliably discern the moral essence of any human act, because we can’t look that deeply into the human heart, or to “the dividing line between the soul and spirit”. To see this, we need only consider the falseness of so many judgments we hear of our own actions, which may be pronounced (on the positive side) “brave and courageous” or “kind” or “generous” or whatever, when we know, usually without saying so, that what was really going on was a different matter altogether, such as a felt need to score some “goodness” points with a certain other person.

It may be that our judgments are most reliable — that is, we most accurately condemn ourselves — when we attempt to judge others. For the error and unfairness of our judgments often express the truism that we are really giving voice to an unconscious knowledge of ourselves and the darker realities hidden within us. That is, we tend to saddle others with the unpleasant truth of ourselves.

What Sapolsky does, in effect, is to take the truth of the gospel saying with ultimate seriousness. How often our judgments leap forth superficially! — for example during a newsworthy criminal trial. I don’t mean the strictly legal judgment of guilty or not guilty. I’m referring to the judgment of moral culpability, our assessment of the degree and kind of moral failure (if any) in this particular human individual under all the constrained circumstances of his life and destiny. Most often, we don’t know what we are talking about.

Yes, free will is a difficult concept

As I have mentioned in passing: despite the book’s subtitle, Sapolsky makes no effort whatever to explain what he means by the “free will” he is so intent on denying. This could have greatly clarified his undertaking in the book. And it would not have required the subtlety of a hair-splitting logic to at least suggest how hard it is to give the concept of free will any coherent meaning at all.

It has often been pointed out in ethical discussions that, so far as we have a real choice to make

between good and evil options — that is, so far as we really *could* go either way — we are still more or less enslaved to the lower part of our natures. If we have real choices in the matter of good versus evil, we cannot be wholly good. That is, we are not really free, but in conflict with ourselves. Freedom, by contrast, would mean being unable to take the lower path — because our entire nature was united at the higher level. It would mean being wholly at one with ourselves, so that we could do no other than take the higher path — say, the path of love.

The upshot of this can sound paradoxical: we are not free so far as we have to choose between responsible and irresponsible options; and we move toward freedom (that is, freedom from unhealthy internal conflict) so far as we lose the opportunity (or temptation) for choice. The question of freedom then becomes: how do we move toward losing all "opportunity" for choice — and toward the higher unity of our own being?

Without going down the rabbit hole in pursuit of such matters, we may at least sense that the usual question of free will — let alone Sapolsky's appeal to "causeless causes" — is badly posed, if not altogether incoherent. But there is a much more fruitful way to approach the problem of moral choice.

Instead of speaking of freedom, it seems closer to our actual concerns to ask whether and to what degree we always end up impressing something of our own meaning upon our actions, regardless of whatever constraints and determinants we may be under. But this brings us up against the strange fact that the meaningful aspects of the world — the different ways in which things and events can "make sense" ("be meaningful"), whether in the inanimate realm or in the significance and character of an individual life — have been pathologically excluded from our modern picture of the material world.

So I need to comment at least minimally about this excluded meaning, an exclusion that may say a great deal about both our age and Sapolsky's book.

Meaning is hard to define

The difficulty almost all scientists have in admitting the concept of *meaning* into their thought — even as they publish millions of *meaningful words* in their scientific analyses and descriptions — is one of the defining and symptomatic features of our culture. We are, after all, speaking beings. It is hard to imagine an existence we could call human in the absence of language, whose whole point is the expression of meaning. If this meaning has become a blank for our intellects and our science today, it is not because the blank is really nothing much. Rather, the blank is quite literally *everything*. It fails to catch our attention only because it is so fundamental and all-pervasive. We are like fish of the deep who fail to notice the water.

The all-too-common demand for a definition of meaning reflects this "too-fundamental-to-see" aspect: in making the demand, we hardly notice that a definition can do some work only because the hearer already possesses a capacity to apprehend meanings — namely, the meanings of the

definition.

Every child at the youngest age exercises this capacity without being instructed in it. Any instruction would already assume the capacity. We are born as beings of meaning. We have no choice but to accept meaning as a foundational given of life — as the very medium of our existence and the very substance of the world (Talbott 2024e).

But most of us, if we should read in George MacDonald's children's tale, *At the Back of the North Wind*: "I have observed that the most wonderful thing in the world is how people come to understand anything" (MacDonald 1919, p. 22). — we would hardly give it a moment's thought, despite its being a dramatic and mysterious truth that might well preoccupy us for a lifetime. We understand things only because they are inherently meaningful, and we live by swimming within a sea of meaning.

In the way a novel would not exist if its words had no meaning, the world itself, including the paper and ink of the book, would not exist (not, at least, as anything describable) if its elements were not "sensible" — if it were not word-like and meaningful. And what a thing could possibly be if it were not in any way describable is a good (and inherently unanswerable) question.

One kind of meaning is the graspable coherence of the landscape around us, and it enables us to find ourselves within this landscape. If, while driving or walking in a normally familiar territory, we suddenly become totally disoriented and do not know where we are or where we are headed, we can sense, however partially and momentarily, how utterly unsupportable life would be without a meaningful landscape within which to locate ourselves.

The meaning of any particular thing is everything that tells us we are dealing with this kind of thing rather than that kind. If we were truly staring at a meaningless world, we would not even exist as coherent selves; we could only flail, never finding any reason to do X rather than Y — never knowing who or what or where we are. That is, without given conditions — conditions that, in their particularity, necessarily constrain us in one way or another, defining and limiting the kinds of meaningful choices available to us — we would have nothing to react to, nothing that provided a setting for meaningful behavior. After all, the meanings of our lives are expressed in how we respond to the vast variety of significant circumstances we encounter throughout our lives.

Meaning has been exalted as the "Logos", demeaned as "mysticism", and banned, as a topic, from virtually all respectable scientific texts. Nevertheless, we navigate among meanings at every step of our way through life, whether in speaking, hearing, or doing. We probably wouldn't know how to obey the command, "Do something utterly meaningless" — and we would certainly fail in the effort, since that command is itself meaningful. In trying to fulfil it, we would find ourselves imparting some sort of meaning to "meaningless".

We would have no world at all if it and everything in it did not speak to us — if it did not lend itself to meaningful *understanding*, including the sort of understanding we write up in scientific papers. This is a radical truth; things would not *be there* if they did not bear their own meaning.[2]

Meaning is not a physical thing. The meaning of a word is not the sound in the air or ink on the

page or a set of neurons in the brain. It is, we might say, *interior*, a content of consciousness. This content might be a law of physics, or the beauty of a sunset, or the moral inspiration of an act we witness, or the familiar gesture of a dog or cat. Without such contents all around us, we ourselves would have no life.

From binary moral choices to meaning

The Christian tradition has failed us by emphasizing simple, yes-or-no moral decisions — a conseqence of focusing on literal principles of law and obedience rather than interpretively pursuing the depths of meaning in the principles of goodness and love. To achieve the good often requires a power of creative transformation, and a reckoning with the complexities of human society.

Real-world moral situations tend to be complex. The moral question does not come down to a choice between pre-defined, right or wrong, good or evil actions. The deeper question is how and to what degree we might move the current situation toward a healthier outcome. The best illustration of this I know comes from a familiar narrative in the gospel of John — about a woman caught in the act of adultery and now about to have her skull and body crushed by a group of men hurling stones. I quote the story in the accompanying box.

If you fully and imaginatively enter into this story, you may find yourself carried to a place beyond words. The morality on display seems more than human. Jesus, seemingly possessed of a preternatural calm, disarms the situation with one simple statement: “Let whosoever is among you without sin be the first to cast a stone at her.” With that statement, he saves a hopelessly condemned woman’s life, he rids her (and himself) of the accusers, he brings to nought the trap they set for him, and, without launching in turn any accusation at them but rather speaking *for* them, he gently brings them as near as they could possibly come to a redemptive reconsideration of their own lives. The quiet, effective, and unexpected wisdom and compassion coming to expression in his response seems as

The Adulteress

From the gospel of John, chapter 8, verses 1-8:

But Jesus went to the Mount of Olives. And at daybreak he appeared again in the Temple, and all the people came to him, and sitting down he gave them instruction. And the scribes and the Pharisees brought a woman who had been caught in adultery and, making her stand before everyone in the open, [They] say to him, “Teacher, this woman has been caught in the very act of committing adultery; Now, in the law Moses enjoined us to stone such a person; so what do you say? (And they said this to test him, so that they might have some accusation to bring against him.) Jesus, however, bending down, wrote upon the ground with his finger. But, when they continued to question him, he stood up straight and said to them, “Let whosoever is among you without sin be the first to cast a stone at her.” And again, bending down, he wrote on the ground. And, hearing this, they departed one by one, beginning with the older of them, and he was left alone with the woman before him. And Jesus, standing up straight, said to her, “Madam, where are they? Does no one condemn you? And she said, “No one, Lord.” And Jesus said, “Neither do I condemn you; go, from now on sin no more.”[3]

much of a miracle as any other actions attributed to him.

Who among us could so easily and thoroughly transform a fraught situation from darkness to light? But all I really wish to suggest at the moment is that this shows us the essence of moral activity. It is not “Will I make the right binary choice between a pre-defined right and wrong?” but rather “What new potentials for good can I create out of this situation?” When thinking about moral responsibility, we tend to reduce imagined situations to a simple, binary opposition (“Shall I steal this loaf of bread or not?”), but when we realize that a complex situation (“How can I keep my hungry child alive and healthy?”) can offer more than one pathway forward, we are led to a richer set of alternatives, partly dependent on our creative power to re-imagine our immediate circumstances.

The idea that, whether through our creative activity or passivity, our lives give expression to an inalienable level of meaning makes no appearance in Sapolsky’s book, if only because he is one of those scientists for whom the word “meaning” is anathema. (But see his revealing “confession” below.) In any case, we should note that the problem of will, choice, and meaning is not always one of morality. Let’s turn from a morally charged situation to a primarily aesthetic one.

Of music and speech

When a pianist plays a Beethoven sonata, the infinitely complex movements of her fingers, arms, and whole body must somehow be coordinated so as to hit the right notes in all their complexity on the keyboard, but also to express her musical sensibility. On any particular occasion — say, a funeral or wedding — she may inflect her interpretation so as to yield a slight shift of character and mood, a shift so subtle that many of us would not even detect it, but that a sufficiently qualified musician might easily recognize. This means that all those complex movements of her fingers and body must be modified in an almost unthinkably nuanced and profoundly artistic manner, appropriate to the changing, moment-by-moment meanings of a particular context.

The result is a physiological realization of the music, all the way down to the finest details of gene expression. These must vary, for the sake of the performance, from one cell to the next over the trillions of cells in her body. And, in addition to gene expression, there are countless other cellular activities that must proceed in harmony with the performer’s intentions — for example, activities having to do with the production and modification of proteins, with the metabolism and infusion of blood in virtually every cell, and with the transfer of energy. That is, all those molecular processes must *themselves* become in some way distinct expressions of the performer’s intentions in light of the meanings of the context, whether it be a wedding or funeral.

It hardly seems possible to say that all these molecular goings-on in the pianist’s fingers and elsewhere are like reflexes dictating her interpretation of the music — rather than her interpretive intention determining the molecular goings-on. This, at least, is our seemingly inescapable, intuitive sense for the situation. Further, we have no reason to think the continuity of aesthetic feeling, will, and intention in the pianist is disrupted anywhere between her conscious intentions and the unconscious cellular processes that yield with absolute seamlessness to her higher activity. Every cell of her body is

informed by her will and feelings — this despite the fact that no cell intends, wills, or feels in any way we would want to call “self-aware”.

I wonder what Sapolsky would say about the pianist in light of his thesis about determinism. He could hardly claim that *absolutely no meanings* of the performance — or of the different performances at a wedding and funeral — are *the pianist’s own*. Or that the childhood influences that have shifted her playing, say, slightly toward the maudlin (to which she may later in life respond with some chagrin) means that, even now, there is no element of *her own playing* in the music. Or that the molecules in her fingers are not unconsciously caught up in the conscious intentions of her performance. Or that the countless excellent musicians around the globe who give professional and sometimes critically acclaimed accounts of beautiful music are not in any way responsible for the character of their own performances.

But if he is not saying any of this, then what *is* he saying? No one will deny, in the case of the pianist, that there are “antecedent causes all the way down”, as he claims in describing physical behavior. The idea of meaning does not require us to argue for exceptions to physical lawfulness. Everything we do, and everything going on in our cells, shows us that physical laws concerning quantitative aspects of *how* things happen on the physical level are perfectly compatible with the fact that those things can intentionally be caught up in — coordinated and organized for — the expression of *meanings*.

This is a truth not so difficult to grasp; we illustrate it every time our vocal apparatus shapes speech conveying coherent meaning. Viewed physically, the speech is unremittingly lawful; as Sapolsky says, there is certainly no crevice into which we can insert “causeless causes”. Nor do we need such causes. We succeed perfectly well at making our speech meaningful despite the inability of our speech organs miraculously to violate physical laws.

This is truly profound, if only we let ourselves consider the fact. And it applies to much more than our literal speech. Virtually everything we do is a form of speech, being an exterior (physical) form with an interior (intentional) significance. We may find ourselves asking: Is the world itself a form of speech, so that we cannot engage it, cannot manipulate it, without our manipulations themselves (our pyramids and cathedrals, our stuffed animals, our computers) whispering to us with voices now modulated by our own intentions.

A significant confession

With my stress upon the meaning of things, it may appear that I have veered radically away from the terms of Sapolsky’s discussion. This is true, and is exactly the point. His entire thesis is already implicit in his starting assumption that there is no meaning in the machine-like lives of humans. And this is exactly what we must reject. If our lives are in fact meaningful (as we all proclaim with every word and action, whatever our intellectual commitments), then all talk about the absence of free will in a meaningless world is seriously misdirected.

Actually, I am only moving *with* Sapolsky, for it appears that he himself, on the occasion of a remarkable confession in his book, rejects his own starting assumption. The confession occurs while he is emphasizing how "logically indefensible, ludicrous, meaningless [it is] to believe that something 'good' can happen to a machine". He has been explaining how evolution has produced "biological machines that can know our machine-ness, and whose emotional responses to that knowledge feel real". He says he tries to be logical and hard-headed about this; that is, he tries to deny the feelings of reality that contradict his intellectual convictions. Then comes his confession: "But there is one tiny foothold of illogic that I can't overcome for even a millisecond, to my intellectual shame and personal gratitude … I am certain that it is good if people feel less pain and more happiness" (p. 392).

It is impossible to see how we could aim at such good, or even believe in it — let alone feel shame or gratitude — if we lived in a meaningless world. And because our world is in fact meaningful, we cannot help finding ourselves, as Sapolsky experienced, living in some relation to the good.

We probably should pay attention when an author, out of his own admirable honesty, fervently contradicts almost everything he has just written. This may count as the most important part of his testament.

The lives of organisms

Organisms are agents. Acknowledgment of the excruciatingly obvious fact of their agency has of late been creeping in around the margins of biology, apparently because the effort of denying it is becoming just too uncomfortable to be sustained. Speaking of the purposive activity that is central to every organism's agency, philosopher of biology Denis Walsh has asked the inescapable question: "Why should the phenomenon that demarcates the domain of biology be off-limits to biology?" (Walsh 2015, p. ix). In her book, *The Restless Clock*, science historian Jessica Riskin devotes several hundred pages to the idea of agency in organisms. She writes:

> I talked about this with a friend who is a biologist, and she agreed that it is absolutely against the rules in her field to attribute agency to a natural entity such as, say, a cell or a molecule, but she also agreed that biologists do it constantly, just as a manner of speaking: they speak and write *as if* natural entities expressed all sorts of purposes and intentions, but they don't mean it literally. "Sure, we do it all the time, when we're teaching, in lectures, even in published articles. But it's just a sort of placeholder for things we don't know yet. The more we get to know, the less the phenomena will seem purposeful. In the meantime we talk as if natural entities had intentions and desires just to make it easier to talk about them"[4] (Riskin 2016, p. 5).

It would be interesting to know whether Riskin's biologist friend considers humans to be "natural entities" and whether she considers her own intentions and desires to be merely pretend ("as if") features of her life.[5] Beyond that, we might respond to this friend by remarking that the language of agency in biology hardly seems incidental or inessential or the mere result of odd lacunae in the biologist's understanding. Taken altogether, this language seems, rather, to point to the fundamental character and distinction of living beings in relation to the inanimate world. Nor has the placeholder

language shown any sign of giving way to a “purer” scientific language, despite the biologist’s obsessively intense, long-running, and sophisticated focus on chemistry and physics, rather than biology proper.

In fact, it’s been quite the reverse: the field that was supposed to dispense with the placeholder language and settle the issue of agency forever — namely, molecular biology — has indeed seemed to settle the issue, but only by showing that agency is the central, defining aspect of biology. This has been the most dramatic, if also the most assiduously ignored, revelation of the radical molecular biological advances of the past three quarters of a century.

The descriptive language employed by biologists everywhere gives testimony to what they actually observe. Virtually the same collection of molecules exists in an animal’s cells during the moments immediately before and after its death. But after the fateful transition no one will any longer think of genes as being *regulated*, nor will anyone refer to *normal* or *proper* chromosome functioning. No molecules will be said to *guide* other molecules to specific *targets*, and no molecules will be carrying *signals*, which is just as well because there will be no structures *recognizing* signals. *Code*, *information*, and *communication*, in their biological sense, will have disappeared from the scientist’s vocabulary.

The corpse will not produce *errors* in chromosome replication or in any other processes, and neither will it *attempt* error *correction* or the *repair* of damaged parts. More generally, the ideas of *injury* and *healing* will be absent. No structures will *inherit* features from parent structures in the way that daughter cells inherit traits or tendencies from their parent cells, and no one will cite the *plasticity* or *context-dependence* of the corpse’s *adaptation* to its environment.

The revelation in all this is indeed decisive. We would lose almost all the page headings in our molecular biological textbooks if we discounted the *purposive tasks* ascribed to molecules on every hand. What is a biological researcher doing today if not asking how this or that meaningful task is accomplished in a cell bursting with life — cell division, wound healing, gene transcription, translation of mRNAs into protein, maintenance of biological “clocks” that stop keeping time immediately after death, RNA splicing so as to produce the “right” protein variants for the cellular activity of the moment, defense against toxins and infectious agents, DNA damage repair, the untangling of chromosomes by topoisomerases, the transfer of energy to where it is *needed*, and everything else that goes on. *Everything* is meaningfully organized, leaving no “crevice” into which we can shoehorn an inert residue that fails to be caught up in one way or another into the intentional life of the organism. This kind of purposive, end-directed activity is definitive of biology, as opposed to chemistry and physics. If an organism is not insistently pursuing its own biological ends in every aspect of its life, it is dead.

The picture only becomes more dramatic when we look in detail at particular processes, such as DNA damage repair or RNA splicing (Talbott 2023 and Talbott 2024c). Try to imagine scores of molecules, engaging in an intricately cooperative way, to perform an elaborately sequenced set of operations amounting to a kind of “brain surgery” on highly repetitive and often extremely long molecules[6] (DNA and RNA). Just “knowing” how to avoid the disastrous choice of a wrong spot on the seemingly monotonous landscape of the target molecule for any given step of the operation is already

a challenge difficult for us to imagine solving. But it all takes place in what cell biologist Paul Weiss referred to as the “heaving and churning” protoplasm of the cell. (Think of being adrift in a stormy sea, heavily littered with debris.) And in that diffusive and watery environment, while colliding with millions of other molecules per second (yes, that’s how it is at the molecular level — Talbott 2024d), every one of those scores of molecular “surgeons” has almost unlimited choice of what to do next (or unlimited “degrees of freedom”, as a scientist might say).

And yet the highly purposive surgery seems be carried out quite successfully as a general rule. The unlimited lawful “choice” of those molecules, we might say, is a kind of *potential* — a potential that is actualized according to the needs and purposes of the organism as a whole.

All this should be shouted from the rooftops — and would be if biologists were not running so fast to evade the conclusions of their own work. But, for purposes of the present review, we will immediately face the conclusions.

What every organism shows us at the molecular level (as at every other level of its life) are endless thousands of examples, without exception, of meaningful, purposive activity proceeding in perfect harmony with all the regularities we are familiar with from the physical sciences. There are no gaps, such as Sapolsky challenges us to find, in the physical continuity of things. But neither are there gaps in the purposive, meaningful activity of living beings. And the two different continuities seem to be entirely comfortable with each other. I have never heard any valid reason to think the physical lawfulness and the meanings incompatible — this despite the fact that we cannot in any way derive the meanings of our lives from the principles of physical lawfulness. It’s more like the opposite: we *can* recognize ideal physical laws as one expression of the meaning of things.

It is certainly true that inanimate processes, as physical scientists have conceived them, know nothing of life. And it is true that those inanimate processes, by themselves, cannot *explain* living activity. But here we are, finding ourselves observers of one meaningful life process after another that takes place without conflict not only alongside, but actually in terms of, those inanimate processes. There is a ceaseless coordination of physical interactions toward the organism’s own ends — a kind of coordination inexplicable in terms of strictly physical law. We don’t need to wonder about this, but only to draw the obvious conclusion from the superabundant facts.

And what is this conclusion? Just that the purposive meanings of biological activity are not superimposed from outside upon a physical reality with which they conflict. Our purposes belong to the perfectly natural order of being fully as much as the ideal laws of physics do. With our willful coordination of physical processes, such as we achieve in our countless manipulations of the physical world (just as earlier generations erected cathedrals of brick, stone, and glass), we may creatively add to the material world an intentional dimension of our own that was not previously there, but we in no way contradict what was (and still is) there in strictly physical terms. Instead, we impart to what was there a new level of significance. So we have no need to find a “crevice” into which we can insert meaning. With our lives as a whole, just as in the molecular activity of our cells, we are engaged in nothing else than the expression of meaning.

The belief that the purposive aspects of an organism somehow conflict with the physically lawful aspects arises only because one *starts* with the idea of a conflict — one starts with the materialist's idea of an essentially lifeless world to which alien life must somehow be added without upsetting the materialist credo. But that idea — the belief that life and mind are alien to the world and must be excluded from our understanding of reality — was never tenable in the first place. What we so vividly witness in the lives of organisms is a seamless unity and harmony between the physical and biological (and higher) levels of description.

The "causes" that Sapolsky sees as leaving no room for meaning or purposiveness obviously are not causes of that sort. We have before us an unending series of empirical demonstrations in every organism's life, all the way down to the molecular level, that physical lawfulness is perfectly compatible with all the meaningful and purposive features of life, whether conscious or unconscious.

Letting go

[To the reviewer: This section is one I may delete as being extraneous to the main thrust of the article.]

Alexander Solzhenitsyn wrote in *The GULAG Archipelago* and elsewhere about how, when he entered the GULAG (Soviet system of forced labor camps), he had to engage in a kind of self-renunciation:

> From the moment you go to prison you must put your cozy past firmly behind you. At the very threshold, you must say to yourself: "My life is over, a little early to be sure, but there's nothing to be done about it. I shall never return to freedom. I am condemned to die — now or a little later. But later on, in truth, it will be even harder, and so the sooner the better. I no longer have any property whatsoever. For me those I love have died, and for them I have died. From today on, my body is useless and alien to me. Only my spirit and my conscience remain precious and important to me." (Solzhenitsyn 1973, p. 130).

Or, as he succinctly put it in a later work, mere physical constraints can be endured because "a man can live in such conditions without harm to his spiritual essence" (Solzhenitsyn 1981, p. 24). There is an inner core of the self, a dimension of meaning one can give to one's own life in the face of the worst circumstances, that no one can take from you.

That, of course — as Sapolsky would probably point out — was the attitude of a highly developed and privileged individual, who happened to be given the good luck and opportunity to develop a profound philosophy of life. No doubt. But Sapolsky never evinces the slightest curiosity about the *truth* of that philosophy. He seems uninterested in asking whether anyone's life can be *wholly* deprived of its own meaning, even if that meaning is at least partially hidden to himself and almost completely hidden to others.

And what we have seen is that meaning is the routine currency of our lives. It does not seem hindered or blocked in the least by the causal closure of our physical existence that so unhappily preoccupies Sapolsky. Such is the pathology of our scientific age, which began by simply *assuming* a radical, Cartesian incommensurability between physical world and the human interior. This

incommensurability, as we can see everywhere in our own lives, is a fantasy without any support.

A concluding thought or two

I hope the central point of this review has come through loud and clear: our natural concern is more with the meanings of our lives than with the issue of free will. “Free will” has something absolute, abstract, and academic about it, so that we are tempted to look for springs of action that are *wholly independent* of the world and society around us. It’s either that or we conclude that we are not really free. This can lead us to the impossible (if not ludicrous) notion of “causeless causes”, as if we could act otherwise than as physical beings embedded in the world.

But the truth of our own experience is that our lives are inseparable from our environments. We cannot even define our own lives except in unity with our surroundings. (Does the air coursing in and out of my lungs and blood and the plasms of every cell belong to me, or the earth’s atmosphere?) Indeed, many a profoundly reflective soul has arrived at the conviction that somehow, in the natural order of things, we meet something of ourselves in the world — perhaps most of all in the travails inflicted by that world. In any case, we learn from everything in the sciences of life that meaningfully directed activity is fully compatible with physically lawful activity. In fact, without the regularity and predictability of the physical world, it is impossible to imagine how meaningful activity could occur at all.

A second and related conclusion I have urged in the foregoing is that the questions of moral choice we continually face cannot be reduced to “Did I with perfect free will check all the right boxes in a list of binary, pre-defined options?” No, the real issue might be expressed this way: “Given all the slings and arrows with which fate has assaulted me, given all that my genes and neurons have thrown at me, and given all the stumbling blocks that my own past decisions have placed in my path, what sort of meaning and transformation of meaning (in myself and in the world around me) have I participated in? *So far as I have the power*, in what meaningful direction have I moved my physically and socially embedded life?”

Or, in slightly different words: “How, within the terms of my fate and destiny, and within the terms of my powers of self-possession and inner activity, have I been able to move *toward* greater possession of myself and *toward* more undivided, integral, healthy, socially responsible, and unconflicted powers of meaningful self-expression?” Whatever significant choices occur along the trajectory of this movement are not likely to be obvious to an outside observer.

Sapolsky has given us much to think about — for example, about the difficulty of fairly judging others. And — although I have not discussed this here — he has raised crucial, if almost impossibly thorny, questions about a criminal justice system that must (precisely because of the impossibility of judging personal responsibility wisely, if not also because of the moral primacy of love) give up all efforts at retributive punishment, and must somehow find a way always to speak *for* the criminal as well as the larger society.

I do not in any way reject the idea that we experience countless shaping influences from the past. After all, *something* has to give us the particular form and constraints that meaningfully define an earthly life. We are not discarnate spirits. But neither do I incline toward denying the self who is in this way shaped and limited and given opportunities, however constrained, to express itself — whether in saving the life of a woman condemned for adultery in ancient Jerusalem, or performing a Beethoven sonata at a wedding today, or, for that matter, languishing in a Stalinist labor camp for a crime one did not commit.

Yes, things happen to us; we are encompassed by *circumstances*. How could it not be? And thankfully so, for that's how we gain the content of our lives. How could we even *be here* except by virtue of the circumstances of our lives? They help us to see who we are and what we might make of our lives *under the circumstances*.

As for the impossibility of morally assessing the lives of others: this is not to say that there are no judgments that could be made by a sufficiently penetrating wisdom. I suspect that almost all of us realize that our own lives could benefit from being laid open before a truly penetrating gaze, even if we ourselves are not capable of such a gaze.

And if I had to say something about the basis for such judgment, I suppose it would go more or less like this in very general terms: the decisive thing is how we bring the better lights of our nature, however dim they may be, to bear upon the murkier recesses of our being, however dark they may be. The crucial thing, in other words, is how we bring the higher part of our being to bear upon the lower. This is not something we are in much of a position to witness and understand in other persons — and perhaps not even in ourselves.

Sapolsky has performed a worthy service by relating the impossibility of judgment to the discussion of morality and the criminal justice system. One hopes he might find his way to a more consistent view of such issues by dropping his adherence to the materialistic and nihilistic dogmas of contemporary science.

Notes

1. The saying comes from the gospel of Matthew 7:1-2: "Judge not, that you may not be judged; For by whatever verdict you pass judgment you shall be judged, and in whatever measure you measure it shall be meted out to you" (translation by David Bentley Hart).

2. That this will seem to most readers an overstatement reflects our culture's deep intellectual investment in Cartesian dualism. The assumption is that *things* are wholly unrelated to mind; they can exist as things altogether without an interior dimension — something that is unthinkable for any products of *speaking*. And traditions the world over tell us that the world was spoken into existence. We can also verify this in our own experience (Talbott 2024e).

3. Hart 2017. Hart includes this footnote with his translation:

“There is little doubt among scholars that the episode of the woman taken in adultery was not written by the same hand that produced the surrounding text. It is not found in the earliest manuscripts of John, or in any Greek or Latin text still extant from before the late fourth century. It is written in a more polished style than the rest of the text, far closer to that of Luke’s Gospel than that of John’s; and, in fact, in certain Greek and Armenian families of manuscripts the story appears in Luke — where it seems to fit better for a great many reasons — rather than in John. It is also a passage that, in both its Lucan and Johannine exemplars, shifts between different locations in the texts; as placed here in John, it clearly interrupts Jesus’s discourse. This does not mean, however, that the episode is some invention inserted into the text to make Jesus appear more compassionate (not necessarily his most conspicuous characteristic in the fourth Gospel). For one thing, in late antiquity — Jewish, Christian, or pagan — it would have been far more scandalous than commendable in most eyes for Jesus to have allowed an adulteress to go away not only unpunished, but entirely without rebuke. For another, there is good reason to think the episode may in fact be drawn from an older narrative source than the Gospel itself: there is a tale of a very sinful woman that the early second-century Christian Papias mentioned as being part of the lost Gospel of the Hebrews; the Syrian *Didascalia* (from the third century) cites “the story of the adulteress”; the *Constitutions of the Apostles* (in a portion probably also from the third century) relates a similar story of a sinful woman whom Jesus refused to condemn; and both Didymus the Blind and Jerome mention the tale as appearing in many manuscripts before the end of the fourth century. Moreover, the earliest texts of John do not merely lack the story; in its place are diacritical marks indicating that something (maybe the same story, maybe something else) has been omitted. Augustine, in fact, aware of the story’s absence from many texts of the Gospel, opined that perhaps it had been removed because of the offense it might give to pious souls unable to understand how Christ could excuse so grave a transgression with no more than an exhortation to sin no more. It seems that the story was something of a freely floating tradition, perhaps with very deep roots in Christian memory, one that was not originally firmly associated with any particular Gospel text, but that was inserted in various versions of Luke or John because it was too beautiful and too illuminating of Christ’s ministry and person to be left out of the church’s lectionary cycle (and hence out of scripture).”

4. Riskin goes on to cite her friend as saying that biologists even use blatantly anthropomorphic language (“these cells want to move toward the wound”) — but never in print. There a different language rules — words such as “control”, “dictate”, and “regulate” (“proteins regulate cell division”), which are merely “shorthand for a complex process that would be cumbersome to spell out on each occasion and that anyway often contains elements beyond the current reach of biologists’ understanding”.

5. The usual explanation for the misleading, “as if” character of human intention has to do with natural selection. On this, see the section titled “The shortest path to confusion is circular” in Talbott 2024f.

6. I am now referring to RNA splicing and DNA damage repair. But consider the task of topisomerase enzymes in disentangling the double helix. The discoverer of these enzymes, Harvard molecular biologist James Wang, has written:

> When we think a bit more about it, such a feat is absolutely amazing: An enzyme molecule, like a very near-sighted person, can sense only a small region of the much larger DNA to which it is bound …

> How can the enzyme manage to make the correct moves, such as to untie a knot rather than make the knot even more tangled? How could a nearsighted enzyme sense whether a particular move is desirable or undesirable for the final outcome? (Wang 2009, p. 41)

You might want to pause a moment over the idea of a molecule "sensing" anything at all. Obviously, the word can easily be used in a misleadingly anthropomorphic way. But, then, what do we make of whatever sort of unconscious "awareness" is actually at work? It's not an easy question to approach. But the pretense that we don't face such questions — the blatant ignoring of them — has thoroughly distorted our current biological science.

Sources:

Goldstein, Kurt (1995). *The Organism: A Holistic Approach to Biology Derived from Pathological Data in Man*, with a foreword by Oliver Sacks. New York: Zone Books. Originally published in German in 1934, and in English in 1939.

Hart, David Bentley (2017). *The New Testament: A Translation*. New Haven CT: Yale University Press.

Riskin, Jessica (2016). *The Restless Clock: A History of the Centuries-Long Argument over What Makes Living Things Tick*. Chicago: University of Chicago Press.

Sapolsky, Robert M. (2023). *Determined: A Science of Life without Free Will*. New York: Penguin Books (Random House).

Solzhenitsyn, Aleksandr I. (1973). *The GULAG Archipelago: 1918-1956*, vol. 1 (Parts I and II), translated from the Russian by Thomas P. Whitney. New York: Harper and Row. Available at https://archive.org/details/TheGulagArchipelago-Threevolumes/The-Gulag-Archipelago__vol1__I-II__Solzhenitsyn/page/n1/mode/2up

Solzhenitsyn, Alexander, editor (1981). *From Under the Rubble*, with an introduction by Max Hayward. Washington D.C.: Regnery Gateway. Originally published in 1974 by YMCA-Press, Paris. Available at https://archive.org/details/SolzhenitsynAleksandrIsaevichFromUnderTheRubble

Talbott, Stephen L. (2023). "", a postscript to Talbott 2024.

Talbott, Stephen L. (2024). "Organisms and Their Evolution: Agency and Meaning in the Drama of Life". https://bwo.life/bk

Talbott, Stephen L. (2024a). "What is the Problem of Form?" in Talbott 2024. The section of the chapter on machine models of organisms is here.

Talbott, Stephen L. (2024b). "The Organism's Story", Chapter 2 in Talbott 2024.

Talbott, Stephen L. (2024c). "The Mystery of an Unexpected Coherence", Chapter 8 in Talbott 2024.

Talbott, Stephen L. (2024d). "Puzzles of the Microworld", Chapter 15 in Talbott 2024.

Talbott, Stephen L. (2024e). "Is the Inanimate World an Interior Reality?", Chapter 24 in Talbott 2024.

Talbott, Stephen L. (2024f). "Teleology and Evolution", Chapter 18 in Talbott 2024.

Walsh, Denis M. (2015). *Organisms, Agency, and Evolution*. Cambridge UK: Cambridge University Press.

Wang, James C. (2009). *Untangling the Double Helix — DNA Entanglement and the Action of DNA Topoisomerases*. Cold Spring Harbor NY: Cold Spring Harbor Laboratory Press.