

Chapter 3

The Non Response of Relaxation

What is Rest?

Basically, rest is doing nothing, or more exactly, when your musculature is doing nothing. Yet, rest feels good, allows us to think better, and helps us get about our day unexhausted and fresh. For any manner of behavior, rest can occur concurrently and indeed enhance performance. This is because in the strict sense rest refers to the absence of the micro-behavioral activity of the musculature, or the small and rapid flexion of the striated musculature that is characteristic of stress. Thus, resting is not antithetical to thinking, moving, working, or playing. Nonetheless, although rest refers to a cessation or marked reduction of neuromuscular activity, it still elicits a cascade of other neurological responses that influence mental and physical performance that are subjectively perceived as positive affect. But how? The initial question is whether these responses are homeostatic or allostatic in nature, or in other words whether rest and its accompanying physiology is a result of an outside demand such as attentional focus or meditation, or whether rest occurs because demand is eliminated.

Put in yet another way, the question is whether rest requires an *eliciting* or an *enabling* cause. For example, an eliciting cause requires us to take some direct action (e.g. running) for accompanying physiological changes (e.g. rapid heartbeat) to occur. In the case of rest, an eliciting cause would be attentional focusing, or meditation. Attention thus acts like a stimulus that elicits a relaxation response. In contrast, an enabling cause represents an action that indirectly allows physiological changes to occur. Thus our bodies 'behave' when we sleep, breathe, digest food, etc., but we have to take no direct action to do these things. Rather, they indirectly occur because we provide the circumstances that enable them to occur. Thus counting sheep leads to sleep, breathing leads to respiration, eating leads to digestion, or avoidance of distraction leads to rest. This recalls the S-R-S metaphor for behavior that attributes behavior to an admixture of voluntary and involuntary causes. Enabling causes are not specific to a response, but merely correlate with one. The confusion of correlation with cause is easy to make, and as we shall see, can be elevated to doctrine if the proper experimental controls are not enforced that can segregate the two. But how

are we to define and compare the enabling and eliciting causes for rest?

Homeostatic vs. Allostatic Rest

Homeostatic rest is perhaps the easiest to understand because there's literally nothing to it. That is, we have to do and think about literally nothing or nothing important to get there. Just avoid distractions in a quiet place, sit back and think of nothing or nothing of consequence and you will feel relaxed. Rest is thus *enabled* by eliminating all distraction, both mental and physical. On the other hand, allostatic rest requires the addition of an eliciting cause such as the silent rehearsal of a nonsense word or phrase, or in other words, attentional focusing. More popularly known as meditation, allostatic rest adds an eliciting cause (attention) to an enabling cause (a quiescent or distraction free environment), with the consequences of rest being the same. Although seemingly simple, this approach is fraught with problems. First, since all meditative disciplines require the conjoint operation of eliciting (attentional focus) and enabling (eliminating distraction) causes, eliciting causes are superfluous if rest comes about regardless of whether focused attention exists. That is, is you can be rested by simply sitting in a quiet place and thinking innocuous thoughts or nothing at all, then attentional focusing is superfluous and practically useless.

So how does a clever (or conniving) scientific mind get around this problem? One way is to attribute additional benefits to focused attention that surpass what occurs through mere rest. A second approach is to simply avoid comparing experimental groups of meditating subjects with non-meditating subjects who are merely instructed to rest (As Holmes so plentifully observed in the meditation literature). A third approach is to deny that rest is homeostatic to begin with and that thinking about nothing in particular is actually a form of attention. And a fourth approach is to metaphorically embellish the subjective attributes of rest to make it seem something more profound than what it really is.

As we shall demonstrate, all four of these approaches are commonly employed by proponents of allostatic rest or meditation. But the question is, are they scientifically legitimate? To answer this question, we must first examine as a comparative benchmark the nature of homeostatic resting states that occur without demand.

Rest in Peace

In the movie 'Altered States', a scientist is locked up in an isolation tank, and hallucinates an alternate reality that causes him eventually to regress into a monkey, and later into a plasma being only to be redeemed by true love. Yeah, the movie was that dumb. But rather than throwing out the proverbial baby with the tank water, there really was an element of truth in our protagonist's experience.

In an isolation tank, an individual lies prone in pool of water, and is enclosed in darkness. All distracting stimuli are eliminated. The subject emerges in not an altered but a natural state of relaxation. Nonetheless, the objective and subjective entailments seem beyond even relaxation. During and after the experience, subjects felt alert, self aware, blissful and indifferent to pain. Corresponding with this enhanced state of well being were physiological states as remarkable. Increased levels of endogenous opioids, reduction of hormones such as adrenaline, noradrenaline, and cortisol, and unique neural activation patterns occurred. Rest was something different and something more than mere muscular relaxation. It represented a complex homeostatic state entirely different from the bland, near featureless state as is popularly conceived.

Studies performed on flotation rest demonstrate conclusively that the elimination of distraction enables not just relaxation, but a complex array of neurological events that accompany relaxation. These events have been found in a broad array of research on rest, but outside of David Holmes' original meta analysis that compared rest with meditation, rest is rarely if ever compared to meditative states, despite the apparent equivalence of their physiological correlates. The question thus becomes whether the dependent measure of rest is equivalent to a meditative state, and whether the demand characteristic of attentional focus does indeed cause rather than correlate with rest. But what exactly is meditation?

Meditation

The source is obvious, the procedure simple, and the cure time honored. Just secure yourself in a distraction free and preferably air conditioned space, and focus on something. It could be a simple word or phrase, or perhaps an object, or the mind could just wander briefly, touching but not reflecting upon idea after idea. This is the act of meditation, and the resting state that follows is a meditative state, and is a prime example of allostasis. But in the tradition of meditation, a lot more than rest is attributed to the meditative state. Barring

the exaggerated claims of practitioners who claim it cures everything from cancer to world conflict, meditation is simply a procedure that produces a resting or relaxed state.

Meditation has been around for millennia, and is integral to religious and spiritual philosophies and is used as a popular stress reduction procedure and adjunct to psychological and physical therapies. Because the adjustment of focus is instrumental in achieving a meditative state, that state is implicitly allostatic in nature, and is essentially different from a homeostatic resting state. Thus, although one may become rested through relaxation therapies such as progressive relaxation, meditative states somehow entail a different and perhaps parallel method to secure rest, and the meditative state itself is something *more* than rest. Although on the face of it this argument seems valid, from a practical and theoretical point of view, it is utterly false.

Practically, no distinction is made between homeostatic rest and allostatic resting states. The claim that meditation is different from rest because of benefits that are not accrued through simple resting is disingenuous, because people elect to meditate because they want to relax, not build brain cells, enter new realms of consciousness, or fight diseases. Indeed, the major non spiritual variant of meditation, Benson's 'Relaxation Response', simply posits that relaxation is an allostatic response to attentional focus, and does not delineate between types of relaxation.

Theoretically, no distinction has been made between homeostatic rest and allostatic resting states. Amazingly, across the modern research literature on resting states, and since Holmes' original comparison between the two, few comparisons has been made comparing rest as a homeostatic state and rest as an allostatic reaction to demand. The research literature hardly exists. The question immediately arises, why?

It would seem that to the scientific mind at least, one would be indifferent to whether meditative states were homeostatic or allostatic in nature, but this is a major source of contention that has little to do to with the objective and empirical standards of science. Indeed, the very notion of the *exclusive* homeostatic nature of rest is ferociously resisted by practitioners and researchers in meditation for the simple reason that homeostatic rest forces one give up the notion of the *instrumentality* of attention. That is, if allostatic rest is equivalent to homeostatic rest, then the notion of demand is unnecessary. That is, there is nothing you need 'do' to directly enter a state of rest. All you really need to do is indirectly set the circumstances in which rest will occur. This of course would be refuted if relaxation really did depend upon a species of attention, but this has never been demonstrated. Indeed, to be relaxed, the elimination of distraction must occur concurrently

with all relaxation protocols, including those that require focused attention. Nonetheless, absence of evidence does not equate with evidence of absence, as the concept of attention as an independent variable must be understood before it can be discarded as an effective cause for rest. Perhaps not surprisingly, attention has never received an operational and biological explanation in the literature of meditation.

The Knob of Attention

Let's say that you are a rather naive sort, and encounter a radio for the first time. If you can hear the radio when background noise is eliminated, but have no means to adjust the volume, then although the workings of a radio remain a mystery, the instrumentality of controlling its volume is an indirect result of controlling background noise. Keeping the room quiet is an unremarkable chore requiring no knowledge or presumed knowledge about how radios work.

But let's add a useless knob that be turned right or left. If you only turn the knob when the room is otherwise quiet, then the correlation between turning the knob and a clear listening experience would be undeniable, but a *causal* relationship would be obviously absurd. Nonetheless, you can if you choose attribute the better listening experience to fiddling with the knob, and if you can somehow obscure the real causal factor of a quiet room, you could probably get away with it.

Transpose this argument to the concept of meditation, and the results and absurdity of the experiment are just as clear. Eliminate the 'noise' of a distractive environment by secluding yourself in a quiet and un-distracting place and eliminating distracting thoughts, and a state of rest will naturally occur. Add the adjustable knob of an attentive state, and rest will correlate the adjustment of attention as surely as a clear channel correlated with turning the knob in a quiet room. Obscure or deny the causal factor of a distraction free environment, and the knob of attention become a causal and not just correlating event. In addition, because the knob of attention is an instrumental cause, it is easy to attribute an entire array of fanciful psychic events to follow in its course, and like a rabbit emerging from a hat, amaze and confound all.

One may protest that this is a *reductio ad absurdum* uncharacteristic of meditation research, to which I reply that this absurd argument is the only line of reasoning meditative advocates have *ever* offered for the simple fact that none of them have actually defined

what the knob of attention does to the innards of our mental radios (or minds) than merely turn back and forth. Indeed, if one can conceptually take off the cover of our metaphorical radio and see what the knob is actually connected to, the argument would be finished upon the revelation that the knob is connected to nothing at all. Similarly, if attention is neurologically demonstrated to be unconnected with the mechanisms of rest, then the argument for meditation vaporizes.

What is Attention?

It is first of all not a thing, but is rather a taxonomy for the moment to moment processes that underscore learning. Learning of course is impossible without the marshaling of the cognitive resources necessary to solve problems and make decisions. These processes involve the activation of cascades of neurons that cause us to be *alert* to salient events, and *aware* of the meaning of those events. Neurologically, alertness and awareness represent different interoperable processes that allow for incentive motivation or learning, yet can nonetheless be separated behaviorally as well as physiologically. For example, attention may represent an awareness of different abstract properties of the environment that may be complex or simple, as in paying attention to a move in chess or just reciting a nonsense word or phrase. Attention may also represent an alertness to salient properties of the environment, as in attending to a novel or discrepant events.

In practical terms, the bifurcation of attention into two different processes means that in meditation attention represents not one but two independent variables, namely a passive awareness of simple patterns of information (repeating a nonsense word) and avoiding alerting or arousing stimuli or distractions. Awareness and arousal represent two different events that although interdependent, are nonetheless different physiologically and behaviorally. *Awareness* represents a conscious activity or behavior, and whether one is rehearsing a nonsense word or a passage from Hamlet, its neural correlates, representing the activation of neocortical or 'thinking' processes, are basically the same. On the other hand, *arousal* depends upon the release of neuro-chemicals or neuro-modulators such as dopamine that activate global arrays of neurons, and cause alertness, increase vigilance, and can be non consciously or non consciously perceived as pleasurable. Of course, to be aware is to be aroused in some sense, as steady or 'tonic' levels of neuromodulators have to be maintained to keep the conscious lights on. For clarity therefore arousal will mean an enhanced and focused level of awareness that correlates with the enhanced, elevated, or 'phasic' increase in the production of neuromodulators that correlates with new, novel, or 'discrepant' events.

If attention can be split into two controllable variables, its effects can be isolated as well. But even here attention has no obvious correlation with rest. We may recite silently the words of Shakespeare or the minimalist repetitive cant of a mantra, and both activate the same neural processes, and both can equally correlate with relaxation. Indeed, the activation of arrays of neurons does not have in itself have any causal properties. We can activate few in a well practiced event such as driving a car, ironing a shirt, and activate many when we are learning to drive or to iron, and rest is the special hallmark of neither (although boredom may be!). For attentive arousal, the conclusion is the same, as the degree of arousal has no demonstrable affinity with rest. Ultimately, attention represents cortical activity, thinking stuff, and although thinking is modulated by neuro-chemicals that incidentally modulate affective states and as we shall see motivation as well, there is no practical or theoretical reason to move from the correlation of attention and rest to the *causation* of attention and rest.

Attention as a process has no special corollary or causative relation to rest, and this fact has been neatly avoided in the literature of meditation by defining attention metaphorically rather than neurologically. As we will next discuss, attention is misdefined through the misapplication of metaphor (meditation is consciousness raising) and by defining meditation through its effects rather than its causes, as in the concept of mindfulness meditation.

Metaphors of Meditation

We all know the breathless prose of an art or food critic, and how with a few soaring phrases ink splashes can be transformed into high art and a ham sandwich into haute cuisine. But does the application of metaphor make something seem better, or actually become better? The answer surprisingly is yes.

A metaphor is a description of something that is accomplished by assigning it a quality it doesn't logically have. Language of course is primarily metaphorical, but we can live with *hot* emotion, *cold* logic, and deal with individuals who otherwise have *marbles* in their heads because we know what it is metaphorical and what is not. We usually know the place of metaphor, and those places where metaphors can be mixed, and where they cannot. In physics, one can use the metaphors of force and mass in the same breath as the mathematical metaphors of the calculus, and be able to move from pictorial to logical descriptions with no problem without fear of conflating the two. Similarly, although one

can speak of the phenomenological and objective qualities of water as parallel attributes, one does not merge them into an equation such as water equals two parts hydrogen, one part oxygen, and one part wetness.

We import meaning through metaphor, and actually feel differently because meaning has been so poetically rendered. Nonetheless, the evocative quality of a metaphor must not be confused with the eliciting quality of the situation it describes. Of course, this is a continuing risk for human endeavors that seem to need a subjective rather than objective description. Separating how one feels from how one *is* is a slippery slope, and the semantic difference between our empathy with a colleague who has a headache and with one who has a conscious raising experience may be blurred if we can not objectively define what those experiences are.

Knowing how one feels is constrained or informed by the concurrent knowledge of knowing what that feeling *is*, and we can speak of the discomfort of anxiety and depression because we know their biological correlates. Yet if we don't know what anxiety or depression are, a bad feeling can be the province of monsters. Of course, we don't need to bring in supernatural causes to describe emotional events that have an obvious bio-logic, but the temptation is great if such events have no clear biology to call their own.

For the case of meditation, the fact that meditative states are difficult to define has opened the door to definitions that *solely* differentiate meditation through their metaphorical (e.g. transcendence, pure consciousness, self actualization) rather than their somatic or neural entailments. Thus by saying that meditation causes 'transcendence', 'self actualization', or other psychic events that lack firm reference to their lower level or molecular correlates, a meditative state becomes detached from its true neural and somatic reality. Secondly, this metaphorical language may be used not because of intrinsic aspects of the experience, but because of the fact that it is *profitable* to do so. For example, in blind taste tests, tap water tastes pretty much the same as bottled water, and indeed both often come from the same source. Yet because bottled water comes at a significant price and tap water does not, the incentive arises to distinguish them by the use of metaphorical language that artificially distinguishes them. Similarly, if one is merely instructed to relax, the generic nature of this procedure comes at no cost and provides no incentive for metaphorical embellishment. In contrast, since meditation is something that is taught for a fee, as well as the simple instruction, is justified by a breathless account of its semi-mystical power. Ultimately, the introduction of metaphor obscures the semantics of meditation, or the real behavioral and neural events meditation must encompass. But metaphor can also change the syntax of meditation, or the very logic of its definition. This is the case for a type of meditation that

upon closer look is not meditation at all.

Mindfulness Meditation: When rest becomes mystical

In Alice in Wonderland, Humpty Dumpty told Alice that things were the way they were because that was the way they were. Saying that black is white, up is down, or left is right was just fine, if of course Humpty said they were. This type of thinking is not just restricted to fairy tales, but is passed off as actual science. All it takes is an unquestioning believer, and an egghead or two to pontificate to you from atop some ivory tower. Such is the case for the concept of mindfulness meditation, a meditative practice that does not require meditation or focusing for that matter. The paradox is that the resulting meditative state remains a reaction, even when there is nothing to react to.

Mindfulness meditation is simple, just lie back and take the world as it comes, but without dwelling on it, and you will gain the same benefits as focused meditation, except that you are not focusing and not meditating. Like a Zen koan, mindfulness meditation is the self help version of such mind teasers as 'one hand clapping', which to enlightened folks makes sense even when to the rest of us, it doesn't. Of course, laying back and observing the world without rumination or thinking pretty much describes what you do when swinging on a hammock, walking on the beach, or in general, resting.

Essentially, mindfulness meditation is an oxymoron, or represents a contradiction in terms, and follows such timeless examples of contradictory speech such as silent applause, military intelligence, or must see TV. That is, mindfulness means a diffuse momentary focus on a host of stimuli, and meditation means a tight focus on one stimulus event, thus leading the sincere reader to guess, which is which? Mindfulness meditation (or inattentive attentiveness?) coopts the objection that rest is a homeostatic behavior by denying that rest is homeostatic to begin with. Thus whether you are concentrating on one stimulus or not thinking about any stimulus in particular, rest will be a reaction to events rather than a response to the absence of events. The fact that mindfulness meditation has a conflicting syntax, or internal logic, is hidden by the obscuring nature of the metaphor of mindfulness. That is, the mindfulness metaphor can divert attention from the very clear and distinct behavioral representation of the practice of mindfulness itself.

The value of mindfulness mediation is that it is a swell way to cover all your bases, and maintain the integrity of the idea of meditation by coopting the concept of rest itself. But

this is a verbal illusion. The greater truth is that the concept of meditation entire is an illusion.

The Fraud of Meditation

The misuse of metaphor to obscure the syntax and semantics of meditation makes the 'science' of meditation confusing, conflicting, and self serving to interests that are not vested in discovering the truth. Whether intentional or not, the fraud of meditation is the abiding sin of obscurantism that massively afflicts psychology to this day. And how can we illustrate the allure of the obscure? Perhaps a simple illustration may suffice.

In a well known cartoon, a scientist proudly shows a chalkboard full of equations to a student, and with special fondness points out the one part of the formula nestled among the calculations that made it be. It was a simple phrase: and here a miracle occurs! As we have noted before for equations that make rocket ships, vaccines, and vacuum machines, such a mode of thinking requiring a deus ex machina won't work, and when the resulting machine fails, the miracle is readily tossed out. But for explanations that don't require test and have no practical applications that demand test, miracles work just fine.

The present controversy over evolution and intelligent design is a case in point. The theory of evolution has been tested and refined for over a hundred and fifty years, but still there are explanatory gaps in the theory that require further exploration and refinement. However, for 'intelligent design' or ID theorists, the answer is simple. Just put into the equation this statement: and here a miracle occurs! Nonetheless, no matter how elegant and simple this answer seems, a gap in the equation is not a defacto argument for inserting a miracle, and indeed a 'miracle' would foreclose any further attempt to close that gap with further research and theoretical refinement. Regardless of the purpose of the equation, the introduction of miracles is not only lazy thinking, it is fraudulent thinking. For the sciences, we are lucky that for Americans at least, introducing miracles breaches the constitutional separation of church and state that our founding fathers introduced to prevent the dangerous admixture of miracles and straight thinking.

Unfortunately, for the not quite science of psychology, miracles sneak in by the boatload, and we are beset with psychic creatures of the imagination from ids and egos to altered states of consciousness that have all the substance of miracles. The concept of meditation

is perhaps a notorious example of this, and indeed it seems justifiably attached to miracles since, like ancient appraisals of the universe, it was originally derived from them. Unfortunately, although science has discarded notions of the divine in its own divination of how the universe works, the divine is still very much a part of contemporary explanations of meditation and the metaphors used to describe it. Of course, it doesn't hurt if meditation is also something people are willing to pay for.

The Subtlety of Rest

The human mind is hard to understand not because it is complex, but because it is subtle. Like the earlier mentioned magician's trick, it is easy to lose sight of key variable plainly in sight for the diverting motion of a wave of the hand that pulls the rabbit from the hat. If the motivation is there to pull off the trick, whether it is economic, religious, or simply for the wonder of it, simple phenomena can be made complex, confusing, and opaque to human reasoning. As I have attempted to demonstrate, the concept of rest is not particularly difficult to understand, but it can be made hard if obscure or mystical properties are imputed to rest that are practically untestable, if proper experimental controls are not established, if its semantics is rendered unintelligible, unknowable, or absurd, and if its syntax is self contradictory.

The more immediate problem is that obscurantist 'science' has, as the definition befits, obscured a true understanding of what rest is. This has in turn made it more difficult to understand the converse or rest, namely muscular tension. Thus there is no science of rest, not because the data are unavailable or are difficult to understand, but because they have been muddled by obscurantist nonsense masquerading as science. But if we can remove the cloud of meditation, we are left with a simple question: if rest does not require an eliciting stimulus, does this hold true as well to its converse of muscular relaxation?

