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Consciousness Is Motor:

William James, Automatism, and the Evolutionary
Physiology of Mind and Action

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One

Introduction: Warp and Weft in William James

All consciousness is motor. The reader will not have forgotten, in the jungle of purely inward processes and products through which the last chapters have borne him, that the final result of them all must be some form of bodily activity due to the escape of the central excitement through outgoing nerves. The whole neural organism, it will be remembered, is, physiologically considered, but a machine for converting stimuli into reactions; and the intellectual part of our life is knit up with but the middle or 'central' part of the machine's operations. (PBC 1892, 321)

1. What This Book Is About

William James was an acknowledged master of phenomenological description. We owe him some instantly recognizable figures that continue to crop up when we talk about consciousness: the newborn's mental life as a "blooming, buzzing confusion"; our experience of time as involving a "specious present"; the distinction between the "fringe" and the "nucleus" of a mental state;¹ and of

¹ James employed the phrase "mental state" regularly, but since no verb form is associated with it, he preferred "feeling" and "thought." He intended the latter two words to denote "mental states at large, irrespective of their kind," even though this usage is "wider ... than usual" (PP 1890, 186). I follow James's usage in treating these three phrases as synonyms throughout this book.

course our “stream of consciousness” that is “nothing jointed; it flows” (PP 1890, 462, 573, 454, 233).²

Perhaps unsurprisingly then, his work on consciousness is chiefly remembered for its answers to what Van Gulick has more recently called “the descriptive question” (Van Gulick 2018). This is the question of how best to describe the basic phenomenology of consciousness itself, from a first-person perspective, and articulating such a phenomenology has often been portrayed as the ultimate aim of James’s 1890 magnum opus, *The Principles of Psychology*. Even sympathetic readers are apt to describe that work as “armchair psychology” (Evans 1990a, 28, Prinz, Dennett, and Sebanz 2006, 5).³

That familiar portrayal is misleading. If James’s account of mind is a tapestry, then his phenomenological descriptions are the colorful weft yarns. But a tapestry cannot be woven from weft yarns alone. A weaver produces a pattern by lacing the weft yarns over and under warp threads that have been arranged on the loom, and that provide the fabric’s structure. James’s tapestry has warp threads, too. The warp threads are third-person data drawn especially from physiological experiment and clinical observation.⁴

² James credited one E. R. Clay with coining the phrase “the specious present.” Clay was the pen name of an obscure cigar-salesman and amateur philosopher named E. Robert Kelly (Andersen and Grush 2009, 295).

³ The term “armchair psychology” traces back to E. W. Scripture in 1895, and it came to be used as a rallying cry for those who wanted to restrict psychology to the laboratory (Klein 1942, 227). Sexton notes that the term has long been turned against James, even though James was himself a pioneer of the “new” physiological psychology (Sexton 1978, 6). More recent commentators like Rand Evans and Wolfgang Prinz (*op. cit.*) apparently accept the label for James, but not the derogatory connotation.

⁴ There are a great variety of readings that, in my view, overemphasize the role of phenomenological description and/or underplay the role of third-person observation in James’s psychology. Some have claimed that for James, descriptive phenomenology was importantly privileged or prioritized over third-person experimentation. Others have even suggested that he

This book investigates James’s account of consciousness with a particular emphasis on showing how the warp threads structure his tapestry. Intense focus on the weft has turned James into a classic source on what consciousness is *like*, but it has long distracted from something deeper—his ingenious account of what consciousness *does* in the context of the body and the environment.

James offered complimentary accounts, in fact, not only of what consciousness does, but of why it does these things. The first question is about the causal role consciousness plays in initiating or mediating action (that’s the “what it does”). The second question is about the evolutionary function consciousness might serve if it typically plays this hypothesized causal role (that’s the “why”).⁵

James’s causal story turns on his claim that consciousness enables the valuation of objects and actions. I use “valuate” to cover the related processes of *prizing* and *appraising*⁶—as James put it, consciousness is like the “judge” who “makes the law while announcing it” (EPs 1879, 45).

Fundamental to being conscious, for James, is to take selective interest in some things over others, to divide the more from the less harmful, the more from the less beautiful. This is a matter of prizing. But in addition to constantly coloring the inflowing sensory barrage, consciousness also enables organisms to

saw third person experiment as near useless. Without attempting to catalog the wide range of approaches that share either of these attitudes, some examples can be found at (Boring 1953, 170, Evans 1990a, b, 435 – 36, Flanagan 1984/1991, 25, Lyons 1986, 6 – 10, Perry 1935, II.24, Seigfried 1990a, 119, 1990b, 12, 51, 54, Wilshire 1968, esp. chs. 1, 2, and 5).

⁵ I use “evolutionary function” as a synonym for an adaptive trait’s etiological function—for the task in virtue of whose accomplishment the trait conferred a survival advantage and thereby proliferated in a population. I will sometimes write that a trait “is an adaptation for” x, meaning that x is the trait’s evolutionary function. I use “physiological role” or “physiological function” to mean the causal difference a trait characteristically makes in generating or mediating bodily change.

⁶ For more on this loosely Deweyan word, see below, pp. 219 *ff.*

think of what is absent—in particular, to hatch goals and to compare them. Hatching and reflecting on goals is a matter of appraising. We will therefore find that grasping James’s account of how consciousness works also requires taking notice of his closely related, volition-based account of action.

The second question James addressed is why, from an evolutionary perspective, we are conscious at all. James hypothesized that a valuating consciousness might be a Darwinian⁷ adaptation for behavior regulation, a task that would be particularly pressing (he argued) for creatures with highly articulated brains. Behavior regulation is the *why-we-have-it* of consciousness, according to his evolutionary story.

What evidence did he offer for these views? James proposed these two hypotheses as inferences to the best explanation—in the first instance, as ways to explain some puzzling vivisection results.⁸ The vivisection results constitute important warp threads in James’s fabric.

His approach to consciousness is methodologically interesting for the way it blends first and third person evidence. In effect James was proposing introspectively-informed hypotheses about consciousness that, *if true, would* explain some otherwise puzzling observations. This is consciousness in the role of explanans, not explanandum. At least during the period I will be considering,

⁷ Trevor Pearce has rightly emphasized the importance of Herbert Spencer for James’s thinking about evolution (Pearce 2020). But James advanced his theory of consciousness as a specifically Darwinian hypothesis, not just a broadly evolutionary one (EPs 1879, 45, 53 – 54).

⁸ “Vivisection” is now used mainly by opponents of experimentation on live animals, but in the Victorian era the term did not carry a pejorative connotation and was used by both opponents and proponents of this practice. James in fact wrote several articles defending what he was happy to call “vivisection” (see EPs 1875, 10 – 13, 1876, 18 – 19, 1909, 190 – 192; for more on this troubling practice, see fn. 141, below).

James rejected demands to explain consciousness itself in the sense of demands to ground it in some more metaphysically basic phenomenon.⁹ Instead he used consciousness to explain physiological findings.

The sense of “explain” here is like an engineer’s. James sought to explain why some puzzling physiological phenomena occur by explaining how they are produced, causally. Thus his account of what consciousness does is developed in service of an engineering-style explanation of puzzling physiological findings.¹⁰

My project is driven in the first instance by a concern to place James’s work in historical context and to assess it in light of its own ambitions. But I will occasionally bring his work to bear on issues of contemporary interest. I concentrate on the period during which James was most actively developing a naturalistic, empirical account of phenomenal consciousness: between roughly 1872, when he first began lecturing on the topic, and 1890, when he published his *Principles of Psychology*. I offer some reflections in a postscript on how his naturalistic account of consciousness might have informed his later pragmatism. Here is a preview of the story I will develop.

The book is divided into four parts. Following the book overview in the introduction, the first part offers some further stage-setting concerning relevant aspects of James’s biography and methodology. There are many rich accounts of James’s life available, so I confine myself (in chapter two) to a few particularly salient aspects of his biography. I focus on his early-career attempt to position

⁹ James was not against metaphysics in general, but rather was wary of certain kinds of intractable, speculative questions intruding into scientific investigation (Klein 2008). Like many of his more positivistic peers, he was particularly wary of the idea that science should try to “explain” consciousness; see pp. 67 *ff.*, below. For more on James and positivism, see (Pearce 2015).

¹⁰ See chapter two for more on engineering explanations.

himself as a new kind of empirical researcher, one who could marry the latest results in clinical and experimental physiology with what he at the time called “introspective philosophy.”¹¹ An offspring of this marriage, as James fashioned it, was to be the nascent science of empirical psychology. I rebut a common caricature of him as a mere “introspectionist” who had little use for third-person, empirical observation. That caricature is rooted in a misleading story about the history of psychology that has become standard in that discipline’s textbooks. James is supposed to have been a leading figure in an era (ultimately put to death by behaviorism) when “introspectionist” methodology dominated. I rebut the caricature by analyzing the real but also explicitly limited role of introspection in James and other leading figures of his era.

James obviously did use introspection, and to great effect. But *pace* the caricature, it was only one of three methods he countenanced in psychology. In chapter three I examine these methods (the others are the experimental and the comparative), along with his detailed model of how introspection operates. I also offer accounts of his views on representation and objectivity, which are tightly connected with his model of introspection.

Some of James’s earliest publications concerned a controversy over automatism—over the hypothesis, roughly, that consciousness is not a causally influential factor in animal behavior. This was an outgrowth of older disputes over what role, if any, nonphysical factors like minds or souls could legitimately

¹¹ Chapter two reviews aspects of James’s scientific background that bring into focus his vision of psychology as a blend of philosophy and physiology. Many fine biographical accounts are available that provide much more detail, not only of James’s scientific training but his philosophical inheritance more generally, as well. See (Allen 1967, Bjork 1988, Croce 2018, Feinstein 1984, Myers 1986, Richardson 2006, Simon 1998).

play in physiological explanation. Part two sets James aside to assess works by four other figures that structured the controversy as he would eventually find it.

Chapter four focuses on Descartes, who was instrumental in developing a mechanical science of animal physiology. That is, he developed a vision of physiology that would appeal to primary qualities of matter alone, except in remarkably limited cases involving willful human behavior.

In chapter five I turn to some 19th century developments in physiology thought to challenge Descartes's mechanistic approach. A blockbuster experiment published by Eduard Pflüger in 1853 demonstrated that living, decapitated frogs not only exhibit reflexive responses to stimuli (a phenomenon that was already well known), but they also perform *purposive* behaviors. Suppose one thinks, along with Pflüger's English ally G. H. Lewes, that purposive behavior is a mark of consciousness. Then one must count a decapitated frog as somehow conscious. If one rejects this mark, along with critics like T. H. Huxley, then one can avoid saying peculiar things about decapitated animals. But this view opens the way for epiphenomenalism: just as pithed frogs seem to act with purpose even though their behavior is not really guided by consciousness, so intact human behaviors may seem purposive without really being guided by consciousness. I examine Huxley's project in chapter six.

Huxley's epiphenomenalism is one form of automatism.¹² He represented an ascendant neo-Cartesianism in physiology that aspired to explain all physiological action in terms of mechanical causes. Pflüger and Lewes were naturalistic vitalists

¹² I analyze the relationship between these two concepts on pp. 158 and 194, below.

who held that living things (including minds) might function according to laws that are emergent and irreducible, but still natural.

Chapter six culminates in a philosophical puzzle that I extract from this history. Lewes and Huxley each found direct support from the same vivisection experiments for their incompatible accounts of consciousness. How can this be? Each physiologist adopted a criterion for what counts as experimental evidence of consciousness, but these criteria were themselves mutually incompatible. The challenge of how to justify measurement criteria has more recently been called “the measurement problem.” I use the historical stalemate over automatism to diagnose this problem’s logical source. In brief, these figures offered clever arguments for their respective measurement criteria, but the arguments were all inductive. I demonstrate why attempts to offer inductive support of such criteria inevitably produce either an infinite regress or a vicious circle. My analysis is intended both to clarify what is at the root of the measurement problem, and to help explain why the controversy over pithed frogs was so hard to resolve.

In part three I turn back to James. When he began working on these issues in the 1870s, he presented his own account of consciousness (which I introduce in chapter seven) as an “empirical” intervention in the deadlocked debate.¹³ He marginalized the metaphysical controversies over vitalism and mechanism, focusing more narrowly on how best to explain some of the puzzling vivisection experiments themselves. Crucially, James’s approach was abductive—that is, he employed inference to the best explanation. He hypothesized that if consciousness

¹³ This characterization comes from a letter at (CWJ 1879, 5.44), which I discuss on p. 192, below.

were playing a valuative role in the physiological economy of higher vertebrates, this would explain some of the observed behavioral differences between intact and pithed creatures. His approach has the virtue of not relying on any measurement criteria at all, I show. Hence James's work on consciousness is methodologically interesting in that it provides a strategy for skirting the measurement problem.

Central to James's abductive argument was a novel way to differentiate between the behavior of vivisected and intact creatures. James emphasized that intact creatures in these experiments have a capacity for more than just purposive behavior—they also have an observable capacity to take account of what he called “absent ... objects” or, as he also put it, “*remote* sensations” (PP 1890, 32).

He illustrated the notion of remote sensations through the example of seeing a snake on a hiking trail. I can entertain the consequences of different possible courses of action—say, going around the snake and risking a bite versus retreating at the price of fatigue. Neither the bite nor the fatigue is perceptually presented at the time of decision; they are absent states of affairs that we can propose to ourselves and value, effectively decoupling the visual stimulus of the snake from an immediate reflexive response.¹⁴ James thought the exercise of this

¹⁴ Here we have an anticipation of a point advocated more recently by representationalists: that an aspect of mental states that is important for guiding intelligent behavior is so-called “decouplability”—e.g., a mental state's capacity to intend or depict a lemon whether or not the lemon is perceptually present (Clark and Grush 1999, cf. Grush and Mandik 2002 for the related notion of “independent targetability”). A summary of the literature on decouplability, along with an attempted refutation, can be found at (Gallagher 2017, 13 – 14, 91 – 96). We will see that for James, something like decouplability is crucial to consciousness's evolutionary and physiological function. But whereas recent representationalists tend to think of decouplability in terms of mental models that have been copied from past experience, for James the paradigmatically decoupled mental item is a representation of a potential future action. This is a theme in part four of this book.

capacity was publicly observable, characterizing as “prudence” (PP 1890, 33) behavior that is both purposive and undertaken in a way that takes account of absent objects. James pointed to a series of experimental results suggesting that de-cerebrated vertebrates have a diminished capacity for behavioral prudence under this definition.

So, the surprising physiological facts that James thought demanded explanation were the subtle, observed differences between the hemisphereless vertebrate’s purposive (but otherwise impaired) behavior and the genuinely prudent behavior displayed by intact conspecifics.¹⁵ He accounted for these observations roughly as follows.

James offered introspective evidence that consciousness incessantly values its objects. He then proposed a quasi-physiological hypothesis: that if it were seated in the hemispheres, consciousness’s valuating agency could explain the prudent behavior we observe in intact (but not in hemisphereless) creatures.

Writing in the wake of Darwin and Spencer, James also insisted that theories of consciousness must pass evolutionary muster. He noted that the spinal frog’s

¹⁵ In his work on consciousness, the vivisection evidence with which James dealt came largely from three classes of higher vertebrates: amphibians, reptiles, and birds. These constitute three of seven classes of the subphylum Vertebrata. Mammals are also higher vertebrates. While mammals like dogs and monkeys occasionally appear in such research, they were less commonly used in the most invasive vivisection procedures for reasons I discuss in fn. 112, below. The other three classes of vertebrates are together commonly known as fishes (Groombridge 1992, 136). James’s focus on higher vertebrates reflects what seems to have been common vivisection practice in his era. Today, research on fish sentience has been both active and polarizing because of implications concerning pain (Braithwaite 2010, Key 2016, Michel 2019, Seth 2016). Readers approaching the material in this book out of an interest in fish pain should note that none of the vivisection research I directly discuss deals with lower vertebrates. James’s theorizing about consciousness should be understood to target the higher vertebrates in the first instance, though I will typically drop the qualifier “higher” throughout, for ease of discussion. For more on so-called “invertebrate” consciousness, see fn. 198, below.

reflexive responses typically go off as “fatally” when prompted as do “a jumping-jack’s when we pull the string” (EPs 1879, 41). This observation led to a conjecture: simple sensory systems might react “infallibly” with respect to a small number of potential environmental changes; but a complex sensory system capable of reacting to many environmental changes should be prone to instability if each star in a galaxy of potential stimuli were to trigger its own reflexive response (EPs 1879, 42 – 43). So James proposed a second, evolutionary hypothesis. If consciousness is characteristically a valuating agency, it might thereby play a role in regulating the behavior of (i.e., in enabling prudent behavior in) creatures with complex neural circuitry (EPs 1879, 56)—and it might have been selected for precisely that purpose. He also pointed to experimental evidence that hemisphereless creatures *lack* this valuating capacity, which he took to be so central to behavior regulation.

Notice that for James in these early years, consciousness appeared in the role of *explanans*, just as I suggested above. Whether or not his view turns out to have been correct in substance, his methodology alone represents an interesting road not taken, and at the start of chapter eight I offer some further reflections on his abductive approach.

Since James was developing an argument to the best explanation of some experimental results, he also sought to undermine rival, epiphenomenalist accounts of those same experiments. He argued that epiphenomenalism is incompatible with basic evolutionary principles, an objection to which I devote the remainder (and bulk) of chapter eight. More recent work on epiphenomenalism by Frank Jackson triggered renewed attempts to answer

James's objection, but his objection has been misconstrued. After properly situating James's argument historically, I sharpen it with the aid of newer theoretical tools from the philosophy of biology. James recognized that not all traits are Darwinian adaptations (he recognized that some are what we now call evolutionary by-products). But he held that a subset of our conscious experiences—phenomenal pleasures and pains associated with processes (like breathing) that are essential for life—have adaptive hallmarks. That is, these mental traits bear telltale signs of having evolved through natural selection. But these traits could not have been selected if (as epiphenomenalists contend) they were causally efficacious.

James's argument against epiphenomenalism has far-reaching implications. If successful, it would suggest that the so-called "hard problem" of explaining phenomenal consciousness is not well formed. His argument calls into question the distinction between access- and phenomenal-consciousness (more on this distinction, below); but this distinction is required for articulating why it is supposed to be not just hard, but *sui generis* hard, to explain consciousness. I make this case on James's behalf at the end of chapter eight.

A full grasp of James's account of consciousness also requires taking notice of his closely related work on will, to which I turn in chapters nine and ten, which constitute part four. If consciousness enables valuation by permitting organisms to entertain possible (but not yet actualized) courses of action, it is in willing that we propose those possibilities to ourselves in the first place, and finally choose which ones to enact. So willing is also crucial for achieving the behavioral regulation at

issue in chapter seven. We can say that consciousness and will thus work hand-in-glove, for James, in generating and guiding prudent action.

James's detailed account of willing is as sophisticated as it is neglected. I offer a reading of some basics in chapter nine. The point of attachment with his physiological account of consciousness is the remote sensation, one variety of which is what James called an "anticipatory image." This is a conscious representation of what experiences we can expect should we perform some bodily motion. According to James, all anticipatory images directly trigger the represented motion (as a matter of brute psychological fact), unless there is some inhibiting factor, such as the agent's also entertaining antagonistic action representations simultaneously. This is the theory of ideo-motor action, and the paradigm of willing is the case where the subject actively chooses between rival bodily-motion representations (like the thought of staying in bed vs. the thought of getting up). The choice is executed via attention, on James's view—via the subject's attending to the anticipatory image that most captures her subjective interest, and doing so until antagonistic representations fade, at which point the idea remaining in the attentional spotlight is naturally enacted.

Like many in his era, James took the reflex as a model for much physiological response—insisting that consciousness is one phase that we abstract out of a larger reflex "loop," both ends of which "have their point of application in the outer world" (WB 1881, 92).¹⁶ But he ultimately denied that all behavioral

¹⁶ The influence on Dewey (particularly in Dewey 1896) of James's holistic approach to the reflex arc is apparent here. Nevertheless, there is a debate about just how strong this influence actually was. On one side, scholars like (Phillips 1971) contend that Dewey's paper develops an approach originally laid out by James (especially in "Reflex Action and Theism," the 1881 essay quoted in the text, which was later included in WB 1897). On the other side, scholars like (Backe 1999)

outputs can be traced back to prior sensory inputs in a fully lawlike way, without remainder. For in our most volitional actions, we break the reflex arc, bringing to bear at least two mental factors that are not themselves either stimuli or mechanical reactions to stimuli: *anticipatory images*, which amount to endogenously generated goal-representations; and *subjective interests*, which we rely on in attentively choosing between mutually exclusive goal representations. Thus, James's work on will suggests that if we want to understand either the physiology or the evolution of consciousness, we will have to take subjectivity into account, understanding "subjectivity" as an agent's capacity to develop her own *goals* and *interests*.

As a historical matter, James's approach did not end up carrying the day. 19th-century mechanists like Huxley effectively sought to fit all physiological response into the template of strict reflex action. According to what is sometimes called the sensorimotor tradition, physiology should seek lawlike connections between stimuli and responses, and simply assume that all apparent "spontaneity" (unpredictable, non-lawlike behavior) will eventually be explained away by a more complete physiology (Huxley 1894, 39, 159). Behaviorists carried this tradition forward in the 20th century, and despite the so-called "cognitive revolution," sensorimotor echoes can be found in computational approaches to mind today, and in various forms of enactivism.¹⁷ But in some recent

contend that Dewey's early Hegelianism was an important and quite distinct influence on Dewey's 1896 reflex arc paper, and that James's influence has been overstated. I will not attempt to adjudicate this debate here.

¹⁷ Critics (like Jacob 2011) have suggested that enactivism is a form of behaviorism, as have some proponents (like Alksnis and Reynolds 2019). One underappreciated link between the earlier and later movements is the pervasiveness they both see of lawlike, exceptionless patterns of

experimental psychology that I touch on in chapter nine, there has been a revival of James's ideo-motor approach, suggesting that his road-not-taken might continue to carry us into the future up fruitful new paths.

Chapter ten highlights an aspect of James's account of will that is closely connected with his take on consciousness's evolution: his claim that every conscious state, including every anticipatory image, produces some bodily change by itself, so that willing is choosing to allow one of several antagonistic action representations to be enacted. This is the thrust of the slogan from which I draw my title: "All consciousness is motor" (PBC 1892, 321).¹⁸

Do not misread the slogan. James intended the "is" of predication, not the "is" of identity. Consciousness has the property of triggering motor response, for James; he was not identifying the two.¹⁹ Moreover, motor response does not

connection between sensory input and motor output (on which see O'Regan 2014, 24). This is another reason James's work is not happily viewed as a form of proto-enactivism.

¹⁸ I mentioned (in fn. 14, above) that James anticipated some insights of contemporary representationalism. Here we see an important respect in which James also anticipated aspects of enactivism about consciousness and cognition. Noë writes that for enactivists, perception involves the physiological mastery of "pattern[s] of sensorimotor dependence"—for instance, we know how to move our bodies to hear a sound source more clearly or to get a closer look at something, and our ability to perceive is "constituted by" this sort of skillful engagement with the environment (Noë 2004, 1 – 2; also see Gallagher 2017, 6, Noë and O'Regan 2002, 569). Similarly, James sees consciousness as inherently tied to the dynamic regulation of action inside an environment. But his insistence on decouplable representations of bodily states would not sit well with today's enactivism. In any case, James's foreshadowing of enactivism in some respects is not surprising as a historical matter. His student Edwin Holt was working out the implications of James's radical empiricism for psychology at the time he (Holt) mentored a young James Gibson at Princeton (Heft 2001, 2002), and Gibson has been a major influence on enactivists. Gallagher also cites Dewey's pragmatism as an important inspiration for enactivists (Gallagher 2017, ch. 3), but says little about James.

¹⁹ Jeremy Dunham calls my attention to a passage in which James considers and rejects something like a 19th century version of sensorimotor enactivism (in the sense of Degenaar and O'Regan 2017). James attributes to Alexander Bain, Théodule Ribot, and Nikolai Lange the view that "muscular adjustment" is "the essence" of attentive thought (PP 1890, 420 – 421). James allows that muscular adjustments may be "constant concomitants of our thoughts" but denies that such adjustments are constitutive of thoughts.

exhaust the physical changes triggered by consciousness. He also recognized a host of other (e.g., autonomic) responses apparently triggered by consciousness as well, and these may also play a role in behavior regulation.²⁰

So on James's view, volition depends on an inherently propulsive consciousness. In contrast, a dominant account of volition in James's day (and our own) portrays willing as the translation of an otherwise *inert* thought into action. Today, philosophers of action sometimes call mental states that play this purported translating role "tryings." James rejected their existence for reasons of evolutionary parsimony, and because of empirical evidence suggesting that *all* mental states trigger some bodily change or other, directly.

He was responding to trying theorists in his era like Helmholtz, Wundt, and Mach, who had often appealed to a web of clinical observations and experiments made on paresis patients. Such patients report a feeling of effort when trying to move an immobilized appendage, for example, despite the limb moving little or not at all. James's targets termed this feeling an "*Innervationsgefühl*" (literally a feeling of innervation), claiming that it arises from the outflowing nerve currents that trigger muscular contraction. In a series of investigations on will and on spatial perception, James set out to dismantle this purported evidence, showing how the paresis observations were also consistent with his own, anti-trying account of will.

²⁰ See below, pp. 31 and 349.

Chapter ten concludes with an overview of James's model of complex action. This model involves anticipatory images being continually checked against reafferent sensation in a feedback loop he called "the motor circle."

Finally, a postscript reflects on how this predictive feedback loop might inform James's philosophical account of mental aboutness—of what makes some conscious state count as a representation of something else. In his later pragmatism, he would contend that mental states represent an object in virtue of affording guidance in navigating to that object and interfering with it in a way that accords with the agent's subjective interests and goals. But this account was anchored (I argue) in the architecture of consciousness and will that James had developed in his earlier, psychological work.

2. On "Phenomenal Consciousness" and "Qualia"

An important caveat is in order before getting underway. I have been using "phenomenal consciousness" as a first approximation to pick out what it is James took himself to be talking about, since he was at least interested in the subjective, qualitative aspects of experience. However, he denied that those qualitative aspects are independent of accompanying physiological inputs and outputs (as an empirical matter, not a conceptual one). That is the upshot of his claim that all conscious states naturally and directly produce some bodily change or other.

This point is crucial to bear in mind, as it creates a mismatch with the way we typically use the term "phenomenal consciousness" today. Here is how James linked consciousness with physiology:

Mental phenomena are not only conditioned *a parte ante* by bodily processes; but they lead to them *a parte post*. That they lead to *acts* is of course the most familiar of truths, but I do not merely mean acts in the sense of voluntary and deliberate muscular performances. Mental states occasion also changes in the calibre of blood-vessels, or alteration in the heartbeats, or processes more subtle still, in glands and viscera. If these are taken into account, as well as acts which follow at some *remote period* because the mental state was once there, it will be safe to lay down the general law that *no mental modification ever occurs which is not accompanied or followed by a bodily change*. The ideas and feelings, e.g., which these present printed characters excite in the reader's mind not only occasion movements of his eyes and nascent movements of articulation in him, but will some day make him speak, or take sides in a discussion, or give advice, or choose a book to read, differently from what would have been the case had they never impressed his retina. Our psychology must therefore take account not only of the conditions antecedent to mental states, but of their resultant consequences as well. (PP 1890, 18 – 19, italics original)

For James, modifications in consciousness are always (again, as a matter of fact) both preceded and followed by bodily modifications, so that “mental life” must be regarded as something that “intervene[s] between impressions made from without upon the body, and reactions of the body upon the outer world again” (PP 1890, 19 – 20). It would therefore be misplaced, on James's approach, to give an evolutionary or physiological account of “pure” phenomenal consciousness in

itself, without reference to the bodily and environmental conditions in which consciousness operates.

But this flies in the face of the way many philosophers conceptualize so-called “phenomenal consciousness,” today. Block introduced this term precisely to distinguish pure subjective phenomenality—what-it-is-like-ness—from what he called “access consciousness”—the kind of informational availability in virtue of which mental states can causally influence behavior (Block 1995). From James’s evolutionary and physiological perspective, this philosophical distinction is invidious. The question is not whether we can *conceptually* isolate these two purported varieties of consciousness, but whether from the standpoint of nature there are two traits that need to be accounted for, or only one.

Today’s philosophers often think of access- and phenomenal-consciousness as two traits. For example, for Chalmers, “both the psychological [access consciousness] and the phenomenal are real and distinct aspects of mind” (Chalmers 1996, 16). The claim that there are two “real and distinct” traits here is staked on metaphysical considerations stemming from now familiar thought experiments involving inverted qualia and zombies.

For James, there can only be a single, unified trait. Phenomenal consciousness—what-it-is-like consciousness—*must* (with the force of natural necessity, in the sense of Fine 2002) have causal power, since if it did not have causal power it could not have evolved. We will see his detailed argument for this claim in chapter eight, where I will also discuss inverted qualia thought experiments.

Did James really have a concept of what-it-is-like phenomenality, or can he be read as giving an evolutionary-physiological account of bare access consciousness alone? He was not just talking about bare access consciousness, and this point is important enough to deserve immediate attention.

Consider that James employed the concept of *qualia*. In fact, he is arguably the originator of this term in something like our modern sense.²¹ Consider this passage:

The internal organs, too, have their specific *qualia* of sensation. An inflammation of the kidney is different from one of the liver; pains in joints and muscular insertions are distinguished. Pain in the dental nerves is wholly unlike the pain of a burn. (PP 1890, 797; italics mine)

At issue here are the distinctive, what-it-is-like feelings associated with different body parts. James is not comparing the *quantity* of pain in dental nerves vs. in burned skin, in this passage. He is comparing the *quality* of those respective feelings.

We get a sense of why James cares about qualia in the paragraph immediately following:

²¹ There is a small literature on the history of “qualia” that typically mentions James as an early example of someone using the term, though he is usually thought to be using it in a way that is somehow at odds with our contemporary philosophical usage. The suspicion is either that James confines the term to *spatial* sensation (Keeley 2009, 86.n3), or that as he uses it “the term means little more than ‘sensation’” (Crane 2000, 178). I think both Keeley and Crane sell James’s usage short, as I explain in the text. Note that Peirce also used the term in 1866 in a way connected with his technical metaphysics (Keeley 2009), and he could have influenced James. James’s usage does not much resemble Peirce’s though. Trevor Pearce points out to me that the German psychologist Theodor Waitz uses the term throughout his *Lehrbuch der Psychologie als Naturwissenschaft* (Waitz 1849), whom James cites in several places (e.g., ECR 1875, 298, PP 1890, 382.n2), and that strikes me as a more likely source for this unusual word.

Can these differences of mere quality in feeling, varying according to locality yet having each sensibly and intrinsically and by itself nothing to do with position, constitute the ... conditions of being perceived in position, of the localities to which they belong? (PP 1890, 798; italics original)

The first thing to notice is that “these differences of mere quality in feeling”—“qualia,” as James has just called them at this point in the text—are explicitly portrayed as having “nothing to do with position,” at least not “intrinsically.” *Pace* (Keeley 2009), James clearly intends the word “qualia” *not* to pick out something inherently positional or inherently spatial.

The misreading of Jamesian qualia as always inherently positional is understandable. For the point of his focusing on non-positional, what-it-is-like properties is to ask whether they in some way provide the “conditions” of perceiving position.

The passage continues this way:

The numbers on a row of houses, the initial letters of a set of words, have no intrinsic kinship with points of space, and yet they are the conditions of our knowledge of where any house is in the row, or any word in the dictionary. Can the modifications of feeling in question [viz., “qualia”] be tags or labels of this kind which in no wise originally reveal the position of the spot to which they are attached, but guide us to it by what Berkeley would call a ‘customary tie’? Many authors have unhesitatingly replied in the affirmative; Lotze, who in his *Medicinische Psychologie* first described the sensations in this way, designating them, thus conceived, as

local signs. This term has obtained wide currency in Germany, and in speaking of the ‘LOCAL-SIGN THEORY’ hereafter, I shall always mean the theory which denies that there can be in a sensation any element of actual locality, of inherent spatial order, any tone as it were which cries to us immediately and without further ado, ‘I am here,’ or ‘I am there.’ (*Ibid.*)

There is something it is like to have an inflamed liver. Is part of that distinctive, qualitative feeling a feeling of the liver’s location? That is, is a distinctive “*quale*” of the pain’s location, as James calls it, presented in the experience? Or is the liver pain distinguished from other pains *only* in terms of other phenomenal qualities none of which are inherently positional? James is asking whether *some* qualia are natively positional—whether there is something it is like for a feeling to arise in a distinct location—or whether *no* qualia are natively positional. This question only makes sense if some qualia are not natively positional.

To follow Lotze is to say that the liver pain is distinguished from other pains, in the first instance, *only* in terms of phenomenal qualities none of which are themselves positional. We impose positions on non-positional qualia, on this view, much as we impose a number order on the inscriptions we call Arabic numerals. There is nothing intrinsic about the mark “7” on the rowhouse door that links it with marks “6” and “8”—the number order is imposed on these inscriptions and learned by language users. This is like Lotze’s view of spatial perception. At least on James’s telling, Lotze held that no qualia are positional; position-awareness is constructed out of (non-positional) qualia.

James denied Lotze's position.²² He thought some (but not all) qualia are in fact natively positional—some qualia cry to us “without further ado, ‘I am here.’” What matters for our discussion is that this notion of qualia is phenomenal—there is something it is like to have an inflamed liver, something else it is like to have burned skin, and indeed, something else it is like for a pain to be “here” rather than “there.” This is a good reason to use the phrase “phenomenal consciousness” in connection with James's work.

But if one uses the phrase “phenomenal consciousness” in a way meant to contrast fundamentally with “access consciousness,” this might suggest one form of consciousness that is causally potent, and another form that is purely qualitative and could change or even cease without altering physiological function. While this latter might be a conceptual or metaphysical possibility, James clearly held that it was not a biological possibility because (as we will see in chapter eight) such a complex trait could not have evolved if it were causally inert.

Thus I take James to be presenting an account according to which there is only one trait here, something like *causally-efficacious-what-it-is-likeness*. This is an ugly expression, but its ugliness is instructive. Today, the distinction between phenomenal and access consciousness is ingrained, so that it takes effort to keep together what once formed an inviolable whole. Since the phrase *causally-efficacious-what-it-is-likeness* is so cumbersome, I simply use “phenomenal consciousness” in connection with James, but bear in mind that I use the latter

²² James defended Hering-style nativism about spatial perception; see (Hatfield Forthcoming, Klein 2009).

term as a shorthand for the ugly expression, and not as Block originally intended it.²³

James is not the only figure whose account of “consciousness” I will be discussing, though, so some looseness in my usage is unavoidable. For example, the epiphenomenalists we will examine (especially T. H. Huxley) obviously did not take themselves to have theories of a causally-*efficacious* consciousness. What is more, on pain of begging the question, when James attacks epiphenomenalist accounts of “consciousness” he cannot be using that term to indicate something that must be causally-*efficacious*, either.

3. Who Cares?

There is an impressive renaissance afoot in James scholarship. Topics that have commanded the most attention include James’s pragmatic epistemology, of course, but also his ethics, religious reflections, social and political philosophy, and historical connections to kindred figures like Hume, Hegel, Renouvier, Husserl, and Wittgenstein (Klein Forthcoming-b, Marchetti 2022b). While there is

²³ Phenomenal consciousness is typically thought to be a form of state consciousness, not creature consciousness (Block 1995, 235), and James agrees to at least that much. He held that psychology should resist the urge to postulate a thinker somehow standing behind our passing thoughts—the thinker just is the passing thought, for James: “as psychologists, we need not be metaphysical at all. The phenomena are enough, the passing Thought itself is the only verifiable thinker...” (PP 1890, 328). So, like in much contemporary philosophy of mind, when James uses the noun form “consciousness,” this should be taken as indicating a property that is properly predicated of mental states, not whole creatures. Also, Block regarded phenomenal consciousness as sometimes transitive, sometimes intransitive—transitive conscious states amount to awareness *of* something, while intransitive consciousness means something like bare awareness, without a particular object (Block 1995, 232). On this issue James held, both early and late, that consciousness is typically transitive—even essentially, he sometimes suggests (e.g., at PP 1890, 186 he says that “reference to an object other than the mental state itself” is “the mental life’s essence”; and he expresses a similar view in the setting of his pure experience metaphysics, at ERE 1904, 4).

growing interest in James's philosophy of mind as well, especially in his work on emotion,²⁴ his evolutionary, interactionist account of consciousness has received surprisingly little attention.²⁵ So one goal of this book is simply to offer a more historically and theoretically nuanced picture of James's work on consciousness, one that takes account of evidentiary sources of his that have been largely overlooked in the secondary literature. I hope James scholars come away with a better sense of how empirical reflections structured his life-long engagement with this topic.

I have tried to write not only for James specialists, though, but also for a broader philosophical audience. The rise of naturalism in our own day has sometimes been accompanied by a sense of revolutionary fervor, as though the application of empirical results to philosophical questions were quite a new thing.²⁶ Thus some advocates of experimental philosophy (one prominent form of naturalism, of late) portray their work as undermining the strictly a priori "philosophical methods" that have supposedly been used "for 2,400 years," as Stephen Stich has put it.²⁷ A more defensible view is that empirically-engaged philosophy has a long, albeit lately-ignored, history.²⁸ And so this book attempts

²⁴ Much of the work I have in mind has been James-inspired, rather than in the first instance historical (e.g., Damasio 2010, Prinz 2004, Strawson 2009), but see (Hatfield Forthcoming, Klein 2018b, Pott Forthcoming, Prinz Forthcoming).

²⁵ For an overview of the existing literature, see below, fn. 206.

²⁶ For instance, (Papineau 1993, 3) portrays naturalism as a reaction against "traditionalists" who insist that "'first philosophy'" must proceed without relying on any "empirically based assumptions."

²⁷ Stich is quoted in the *Chronicle of Higher Education* (Shea 2008, 9). Anthony Appiah also portrays the movement in a revolutionary light in a *New York Times* essay (Appiah 2007).

²⁸ Some experimental philosophers who take a more revivalist attitude include Knobe and Nichols, who advocate "a return to [a] ... traditional vision" that sees philosophy as continuous with the sciences, although they go on to suggest that experimental philosophy is revolutionary in that today's practitioners are themselves willing to conduct "systematic empirical studies" on

to excavate—for any philosopher interested in naturalism—the small but important part of this neglected history of which James’s work on consciousness is a part.

That James bears affinities with more recent philosophical naturalism is, by itself, not a novel point (e.g., see Flanagan 1984/1991, 23 – 24). Yet even those who celebrate his naturalist theories of mind too often ignore the empirical details he brought to bear in support of those theories, so that we are left with the impression that James was a naturalist in spirit, but perhaps unwilling or inept when it came to engaging actual empirical work.²⁹

Indeed, some commentators go even further. Rand Evans, to take one prominent example, suggests that James “openly rejected experimental psychology and the methods of the laboratory” (Evans 1990b, 433; also see Evans 1990a, 28). In the *Principles* James is supposed to have sided

not with experimental psychology but with what he called “introspective observation.” ... James meant by introspective observation, “the looking

philosophical questions (Knobe and Nichols 2008, 3). Although Appiah sounds like a revolutionary in his popular writing (see fn. 27, above), in his more scholarly work he contends that experimental philosophy is actually as old as philosophy itself (e.g., Appiah 2008a, ch. 1, Appiah 2008b), a thought echoed by (Sytsma and Livengood, xvii – xix, ch. 1). And (Kitcher 1992, 54) portrays Fregean linguistic analysis as “a revolution which overthrew philosophical naturalism” as exemplified by Descartes, Locke, Leibniz, Hume, Kant, and Mill. A few historians have begun looking in more detail at earlier instances of empirical or experimental philosophy, notably Peter Anstey and Alberto Vanzo (e.g. Anstey 2005, Anstey and Vanzo 2016, Anstey and Vanzo 2012). Also see the issue of *British Journal for the History of Philosophy* on this topic, which is guest-edited by Vanzo, and in which my (Klein 2018a) appears. And Barry Allen has produced an expansive history of empirically-driven philosophy, which he traces from today all the way back (through James, whose only advanced degree was an MD) to ancient medical practice (Allen 2020).

²⁹ For instance, Flanagan portrays James as a naturalist, but goes on to draw mainly on the latter’s introspective observations, taking little account of empirical results discussed in the *Principles* (Flanagan 1984/1991, ch. 2).

into our own minds and reporting what we there discover” [fn.: PP 1890, 185]. What James found there, of course, were states of consciousness. His was a phenomenological description rather than an analytical description as was used by Wundt and Titchener. James’s notions of psychological description were based on the fundamental precept that “all people unhesitatingly believe that they feel themselves thinking, and that they distinguish the mental state as an inward activity or passion” [fn. omitted]. ... He believed, however, that the age-old method of philosophy would best serve to resolve any individually erroneous observations. ... His was the tried and true method of philosophical observation and reflection. (Evans 1990b, 435 – 36)

This kind of attitude about James is widespread.³⁰ An early example is found in Perry’s classic 1935 study, where we read that James’s physical limitations, his quantitative ineptitude,³¹ and his impatience prevented him from contributing “experimental results of importance”; and these limitations dovetailed with James’s supposed “opinion that the new laboratory method had not yielded significant results” in physiological psychology generally (Perry 1935, II.24). Similarly, Boring calls James “but a half-hearted experimentalist” (Boring 1929/1950, 495). Danziger casually refers to “nonexperimentalists like J. S. Mill and William James” (Danziger 1980a, 251). And so on.

³⁰ A similar view about James’s attitude towards experiment (which is supposed to have come “very close to bored contempt”) can be found at (Klein 1942, 229).

³¹ James had no special quantitative talent, but his supposed mathematical ineptitude has been wildly overstated. Francesca Bordogna has shown that James was fairly seriously engaged—and quite deeply influenced by—some of the major mathematical controversies of his day, particularly as represented in Bolzano, Dedekind, and Cantor’s respective work on the so-called “new infinite” (Bordogna Forthcoming).

Wilshire approvingly cites Perry's contention (Perry 1935, II.24) that "[n]ot more than a fifth of his *Principles of Psychology* can be said to relate even to the experimental work of others" (Wilshire 1968, 25). Perry does not explain how he arrived at his one-fifth estimation, but Wilshire appeals to this supposed statistic to cast doubt on the notion that James's *Principles* should be read as a genuine attempt to build a properly scientific psychology. Wilshire instead suggests that we should see James as quietly building towards a "phenomenology" that is fundamentally an "a priori" "transcendental inquiry" about the necessary preconditions of phenomenal experience.³²

That James produced few "experimental results of importance" is one of the two most commonly-cited bases for the "introspectionist caricature," as I will call it, according to which James's work on the mind supposedly relied almost exclusively on phenomenological description and largely eschewed or downplayed third-person evidence. The other basis for this caricature is textual, involving a few lines from James's psychological work that are supposed to demonstrate that he "openly rejected" the use of experiment in psychology (in Evans's words). I will examine both arguments in detail (in chapter three). I will also offer (in chapter two) some biographical background on James's scientific training and experimental practice, along with a consideration of his most well-known (and I think widely-misinterpreted) remarks on psychological methodology in the *Principles* and in the *Briefer Course*.

³² I have offered considerations that tell against this sort of reading in (Klein 2008, 2009). For a charitable history and overview of this reading that nevertheless raises related concerns, see (Levine 2018).

James's own experimental results, while more substantial than the caricature suggests, really are not and should not be the basis for his good reputation—that much is accurate. But his empirical reflections on the mind were rarely based on his *own* experiments. The drift of this book suggests that when it came to experiment and clinical observation, James's real gift was as an interpreter and synthesizer. He had an almost unrivaled grip on the latest empirical literature in physiology and psychology—perhaps totally unrivaled compared to those few who also shared his facility with more literary texts in philosophy, as we shall see in chapter two.

James had had high-level training in physiology, chemistry, evolutionary biology, and medicine. By all accounts he also read widely both inside and outside of the sciences from a young age, spurred on by his father, an idiosyncratic theologian with hereditary wealth. And thanks to an international upbringing, by the time of his young adulthood James was fluent in both French and German.³³ All of this helped him move easily in rarefied intellectual circles in Europe, gaining access to researchers whose laboratories were churning out leading results, as well as to foreign-language literature in which those results were being published. Thus he was particularly well-positioned to put his observant phenomenological descriptions into contact with a battery of up-to-date empirical work, and in this respect James is an important precursor to some naturalistic approaches to mind, today.

³³ To get a sense of James's linguistic abilities, along with his incredibly wide-ranging intellectual interests from a young age, see (Richardson 2006, 14 – 17 and *passim*). I have examined some aspects of James's philosophical debt to his father in (Klein 2019a), and of his tendency to draw from international sources in (Klein 2021a).

In any case, I mentioned above that this book is not only written for James scholars, but also for those who have more purely theoretical interests in consciousness and related issues. These more theoretical readers will (I hope) be intrigued by James's phenomenological description, by his psychological methodology, and by his more philosophical argument. But they may wonder why they should bother reading about the outdated science that (on my reading) undergirds this other work.

Here is one answer. Scientific results can be outdated in the sense of having been proven false. They can also be outdated in the sense of belonging to a research paradigm that is no longer active. As far as I have been able to discern, the empirical results up for discussion in this book are largely outdated in the latter sense, not the former—call this *discarded* science. Do we know more about neurophysiology today than we did then? Yes, we know much more. But have the main vivisection results been shown to be false in any substantial way? To my knowledge, the answer is no. That research was brutal and has ceased for good ethical reasons. As an experimental program it is dormant—but the results are not in the main erroneous.³⁴

³⁴ To be sure, brutal experimentation on living creatures has not stopped, as a referee emphasizes. To get a sense of what nonhuman animal experimentation looks like today, one can consult data on research conducted at the Francis Crick Institute, one of the largest biomedical research institutions in Europe (<https://www.crick.ac.uk/research/animal-research/numbers-and-types-of-animals-used-in-research>). Their data from 2021 show that 30% of experiments conducted on nonhuman animals had more than “a negligible impact on the animal’s wellbeing,” which includes everything from “minor, short-term pain or distress” to “severe” impacts, up to and including death. Still, what I take to be dormant is the specific experimental program of localizing physiological function in the brain by using either crude decapitation or a more sophisticated procedure now known as “single pithing” (for more on this technique, see footnote 111, below). These methods have long ceased to be regarded as acceptable, though they may well have inspired morally questionable procedures still being used. In any case, for some limited evidence that the results of the older research program are not, however, generally doubted today, consider that a

We should be careful about placing too much stock in old experiments that we cannot verify using modern techniques, admittedly. The results readers will encounter do not meet today's standards of experimental practice. The widespread acceptance of those standards (including standards like a demand for replication, null-hypothesis testing, blinded methodologies, and so on) post-date the laboratory work we will examine. And even if we wanted to replicate this work, today, we should not do so, since the experiments involve surgical procedures on live animals that shock the conscience. And since the results we will examine are tailored to answer 19th-century theoretical questions, they are cashed out in a vocabulary that would be awkward at best to integrate with contemporary approaches.

And yet, the experimental work at issue is not the emission theory of vision.³⁵ If there is a spectrum of rigorously-tested results ranging from that which we have the best reason to accept to that which we have the best reason to reject, these physiological experiments float somewhere in the vast, hard-to-catalog middle, but drifting towards the shores of the admissible. They cannot and should not be repeated in just the way they were originally conducted. But I hope patient readers will find that nevertheless, they have a capacity to spur the imagination, today.³⁶ Discarded science is a vast ocean. Some of it is nutrient rich.

journal article of mine on the topic continues to be cited in various scientific (non-philosophical) papers. E.g., see (Lee, Kominami, and Ushio 2021, Millhouse, Moses, and Mitchell 2021, Wood 2021).

³⁵ This is the theory that vision is realized by light rays emitted from the eye. Euclid developed the view in his *Optica*. It was further refined in the medieval world by Alkindi among others (Lindberg 1971), and later criticized by Ibn al-Haytham (Alhazen) in the tenth century (Rashed 2016). For a brief account of Ibn al-Haytham's experiments, see (Zubairy 2016, 9).

³⁶ Hence, I am sympathetic with Hasok Chang's idea of "complementary science," a research program that calls on historians and philosophers to help "*proliferate* ... valuable alternative

4. On the Weaving Metaphor

A few final words are in order about the weaving metaphor in this chapter's subtitle. I take empirical reflections to be ineliminable parts of James's tapestry—but the metaphor is meant to emphasize that they are neither self-standing nor wholly independent of the introspective description he offers. The trouble is that James's introspective description has been so transfixing that readers have too often made the error of looking only at the colorful weft yarns—at the phenomenological treatments—without taking account of how they mesh with the warp—with the empirical component.

Also, while James evidently sought consistency across his many varied writings, he was not a geometric thinker in the sense of building up a grand account out of a few basic axioms or principles. Instead, he followed a more piecemeal strategy in investigating the many special mental topics that interested him. As such, although his work on consciousness perhaps occupies a central position on the tapestry, I take this to be one special account among many. In other words, I do not claim that his provocative accounts of attention, the self, spatial perception, temporal perception, emotion, and so on, in any simple way presuppose or logically depend on his account of consciousness. This is another respect in which his theory of mind is tapestry-like. There are methodological threads that unify the fabric, continuities between what adjacent patches depict,

scientific systems ... alongside the orthodox and the fashionable" (Chang 2012, 284). Unless one thinks scientific progress is strictly "linear" (Chang 2009, 252)—and exhaustively cumulative, as though nothing worthwhile falls away—then cobwebbed chapters in the history of science, and indeed in the history of philosophy, stand to challenge and invigorate our investigations even today.

and general patterns that emerge when one steps back and takes in the entire cloth as a whole. But this is quite different from offering a system built from a few basic principles.

His friend Charles Sanders Peirce sought “to lay the foundations deep and massive” (CP I.1) for a grand intellectual system. But James is better regarded as a theoretical weaver who tried to knit together many spools of “facts” (a favorite word of his)³⁷ into a whole cloth.

³⁷ His brother, the novelist Henry James, once remarked: “There was not a single fact which, *qua* fact, did not give him a certain amount of pleasure” (quoted without further attribution at Wahl 1925, 116).