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Pragmatic Constructivism: Revisiting William James's Critique of Herbert Spencer

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Introduction

Like so many academic slogans, "constructivism" is as imprecise as it is suggestive. In the domain of education, and within science and mathematics education where it is frequently invoked, the term carries with it more than a hint of progressivist ideology. In its stress on the unique and idiosyncratic ways in which students build-up their knowledge, and the accompanying pedagogical need to take this fact seriously, one might say, as Phillips does, that "most types of constructivism are modern forms of progressivism" (Phillips 1995, 11). It is not constructivism as a pedagogical formula, however, that I wish to consider here, but rather its philosophical use as a theory of how knowledge works. From the outset, it is important to recall that although much constructivist talk is currently taking place in the educational arena, it is (and has been for a long time) in the hands of a much wider public, including philosophers, sociologists, literary theorists, anthropologists, and historians. In broad terms, constructivists challenge the givenness of reality, the impression that ideas, experiences, or behaviours are somehow transcendently grounded—stamped by Nature to *be* a certain way. Nothing, constructivists argue, has fallen from the heavens in pristine form, but is a human artifact shaped (or wholly constituted) by the contingencies of history, or the constraints of culture, or the structure of a language, or even the idiosyncratic processes of the individual *psyche*.

Once one drifts from the local varieties of constructivism present within education to its relatives abroad in other regions of *academe*, one suddenly finds oneself amid a mass of positions unified—if at all—only by the challenge to the claim of ontological givenness. In the face of this bustling complexity, Phillips has begun organizing these myriad views under the umbrella-term "constructivism," using a framework wherein writers as diverse as Kant, Dewey, Piaget, and Kuhn can be accommodated.¹ My project here, however, will not be to attempt a taxonomy of constructivism, nor an historical portrait of its emergence. Instead, I will examine on one of its many forms, *pragmatic constructivism*,² as revealed by William James (1842-1910) during his critique of the popular nineteenth century British theorist, Herbert Spencer (1820-1903). Spencer, as I will show, became James's arch-objectivist and served as a foil against which James could develop his ideas about the active and teleological nature of consciousness, the creative power of human agency, the instrumental character of truth—claims that make him sound very much like a member of the constructivist camp.

In what follows, I turn to James's first encounter with Spencer's work in the beginning of the 1860s. With that in the background, I then investigate James's five published critiques of Spencer in chronological order, at times turning to his private correspondence, at other times filling in relevant historical details.³ Although I spend some time historically contextualizing James's critique, my focus will be on the substance of his arguments and their salient themes since, in a concluding section, I will try to say what all this means for constructivism. In particular, I will examine the recent debates surrounding

Ernst von Glasersfeld's "radical constructivism" in the educational arena. This investigation will, therefore, be a strategic re-enactment of James's critique of Spencer, one that will be used to insert James's voice into the constructivist controversy.

An Overview of the Critique

Although the ideas of Spencer were just appearing on the American horizon in the early 1860s, his evolutionary theories soon enveloped the landscape, drawing the attention and enthusiasm of many American intellectuals, businessmen, and social leaders. William James was an early member of this awe-struck crowd. Spencer's *First Principles* fell into his hands during his late adolescence and, like so many others, he fawned over Spencer's work. In the space of little more than a decade, however, James's opinion of this British theorist turned increasingly sour. The aura that once surrounded Spencer grew dim and his ideas appeared stultifying to James. The evolutionary principles that could once wrap the entire universe together into a neat package now appeared to be squeezing the life right out of it, eliminating all the complexity, dynamism, and richness. Not only were the holes in his theoretical net too big, ignoring too much for the sake of too little, but his claims to exclusivity annoyed James. For James, no single conceptual framework could ever exhaust, once and for all, the entire range of human experience. If anything bothered James more than Spencer's pretension to have finally "got it," it was the deterministic implications of his ideas. He attacked Spencer's determinism into whatever area it crept. In the realm of psychology, James attacked Spencer's claim that the function of consciousness was one of mere "correspondence" to the environment. Socially, James defended agency against Spencer's position that individuals did not really have a significant hand in social transformation. Spencer saw individuals as passive agents, akin to what Garfinkel called "social dopes" (Garfinkel and Sacks 1970), like dead wood tossed back and forth on the surface of a vast ocean over which they had no control. Spencer's universe, unlike James's, was already "finished" from the standpoint of humans. It was pre-programmed for evolutionary progress, and one's task, therefore, was to adjust to its unfolding patterns. Even Spencer's idea of science seemed hopelessly deterministic to James. He wrote as if the Universe itself whispered its eternal laws into one's ears with little or no feedback from people. By contrast, James argued that humans used scientific investigation and theorizing as tools to get things done in certain situations. "Theories," James later wrote, "thus become instruments, not answers to enigmas, in which we can rest" (James 1955, 46).⁴

The Critiques of Herbert Spencer

Having abandoned the idea of becoming a painter in the summer of 1861, James began studying chemistry at Harvard's Lawrence Scientific School (James 1990, 474). The following year, the first volume of Spencer's *Synthetic Philosophy*, *The First Principles of a New System of Philosophy*, found its way onto the bookshelves of America. This was the text that the young James picked up and adored. It was in the *First Principles* that Spencer gave his oft-cited definition of evolution as "a change from a state of relatively indefinite, in-

coherent, homogeneity to a state of relatively definite, coherent, heterogeneity” (Boller 1969, 122). Spencer deserves the credit (and James would later argue condemnation) for using this evolutionary principle to explain just about everything, applying it to “the evolution of the Solar System, of a planet, of an organism, [and] of a nation” (Spencer 1872, 327). His ambitious project of the Synthetic Philosophy over the years yielded an immense corpus, including *The Principles of Psychology* (1855), *First Principles* (1862), *The Principles of Biology* (1864-1867), *The Principles of Sociology* (1876-1896) and *The Principles of Ethics* (1892-1893)—all of which display his impulse to discover the basic “principles,” the *evolutionary* principles, that underlay the natural, biological, and social world (Sills 1968, 123). Reflecting on his first encounter with Spencer’s *First Principles*, James writes the following:

I read this book as a youth when it was still appearing in numbers, and was carried away with enthusiasm by the intellectual perspectives which it seemed to open. When a maturer companion, Mr. Charles S. Peirce, attacked it in my presence, I felt spiritually wounded, as by the defacement of a sacred image or picture, though I could not verbally defend it against his criticisms. (James 1978, 116)

Like so many others of his day, James was swept away by what he later called the evolution “craze” (Perry 1935, Vol. I, 667). In the years that followed, however, this enthusiasm wore off.

As a professor at Harvard College, James offered an undergraduate course in “Physiological Psychology” starting in the fall of 1876. In it, he included Spencer’s two volume work, *Principles of Psychology* (1855, 1870), as one of the core texts. James’s inclusion of Spencer’s text, however, was no longer a reflection of his admiration for Spencer’s work:

My new Spencer elective has proved quite exciting and arduous. . . . I have some bright boys in my Spencer class—but I am completely disgusted with the eminent philosopher, who seems to me more and more to be as absolutely worthless in all *fundamental* matters of thought, as he is admirable, clever and ingenious in secondary matters. His mind is a perfect puzzle to me, but the total impression is of an intensely two and sixpenny, paper-collar affair. (Perry 1935, Vol. I, 374)

Although he acknowledges that he is “clever and ingenious in secondary matters,” James displays in no uncertain terms his growing disdain for Spencer. As Perry notes, during his classes James would often encourage his students to challenge Spencer’s ideas (Perry 1935, Vol. I, 476). The lecture notes that James used during this class formed the basis of his first important article, “Remarks on Spencer’s Definition of Mind as Correspondence” (1878), a piece that attacked one of the central claims of Spencer’s *Psychology*.

“Remarks on Spencer’s Definition of Mind as Correspondence” (1878)

How does the mind evolve? What is the relationship between consciousness and environment? The answers to these questions, according to Spencer’s *Principles of Psychology*, is found in a central evolutionary principle which ostensibly underlies the entire range of mental processes. Minds evolve, Spencer claims, through an “*adjustment of inner to outer relations*” (James 1978, 7-8). When the mind accurately cognizes the way things are in the outside

world and adapts to such environmental demands—that is to say, when it correctly “corresponds” to the world’s contours—one moves toward mental perfection (James 1978, 8). This is what constitutes human intelligence.

In responding to this assertion, James starts by noting that Spencer’s evolutionary formula supposedly covers the “entire process of mental evolution” and yet leaves out “aesthetic impulses, all religious emotions and personal affections.” As James writes, “the ascertainment of outward fact constitutes only one species of mental activity” (James 1978, 8). He thus finds Spencer’s framework extremely reductionistic. As I will describe below, the flat, two-dimensional quality of Spencer’s work is a theme that reappears again and again in James’s comments on Spencer.

After claiming that Spencer has omitted much human experience from his framework, James makes a bolder move. He states that Spencer’s emphasis on subjective “correspondence” to the objective world completely *erases* any sense of inner interest by which we selectively interact and impact the environment which confronts us. Consciousness becomes, to borrow Garfinkel’s expression, a “social dope.” “The inner relations,” according to Spencer, “are ‘adjusted,’ ‘conformed,’ ‘fitted,’ ‘related’ to the outer.” Environment, in short, is a massive, external force that pushes the mind around.

To prove his theory of correspondence, Spencer turns to the example of a polyp. Although James disagrees with Spencer’s belief that a more primitive form of life will yield greater insight into the workings of human consciousness, he argues that even the polyp defies Spencer’s correspondence principle. James declares that the polyp “is the most narrowly teleological of organisms; reacting, so far as he reacts at all, only for self-preservation” (James 1978, 10). What can “correspondence” mean when one sees the polyp moving around, avoiding obstacles and trying to survive? Has it not an implicit teleology, asks James—that is, the need to stay alive? In this way, James argues that “mere correspondence with the outer world” says nothing about the way in which creatures even as primitive as the polyp conduct their lives. The most cursory observation reveals that they actively *do* things. But even when James corrects Spencer’s treatment of the polyp by making self-preservation its implicit teleology, he finds a further point of criticism when he turns to human consciousness: in the case of humans, there is a plurality of purposes and, hence, “survival is only one out of many interests” (James 1978, 12-13). As James pointedly states, “If ministry to survival be the sole criterion of mental excellence, then luxury and amusement, Shakespeare, Beethoven, Plato, and Marcus Aurelius, stellar spectroscopy, diatom markings, and nebular hypotheses are by-products on too wasteful a scale” (James 1978, 15).

In this way, Spencer’s notion of the “survival of the fittest” must take its place beside other motives and other ideals that exist in the realm of human experience. Thus, one comes across the following problem, again, cleverly highlighted by James. How is one to know what *really* steers mental processes? Is it controlled simply by the instinct for survival as some claim? Is it instead driven by a quest for experiential richness, James asks? His argument reaches its crescendo when he rhetorically poses the following question: “Is it not already clear to the reader’s mind that the whole difficulty in making Mr. Spencer’s law work lies in the fact that it is not really a constitutive, but a regulative, law of thought which he is erecting, and that he does not frankly say

so?" (James 1978, 15). Spencer's conflation of the descriptive and the prescriptive, the "constitutive" and the "regulative," puffs up his interest-driven, perspectival claim about the nature of consciousness into a monolithic, universal law that ignores the hand that wrote it. James says that Spencer firstly does not explicitly discuss the teleology of self-preservation that is implicit in his polyp example, and secondly assumes that this hidden telos applies to all creatures in all situations for all time. By stating this, James wishes one to see that one's approach to the world is situational and selective. When concluding, he seems to catch a scent of the paradoxical nature of his critique and feels the need to reflexively problematize his own discourse using the same argument that he used against Spencer:

I, for my part, cannot escape the consideration, forced upon me at every turn, that the knower is not simply a mirror floating with no foot-hold anywhere, and passively reflecting an order that he comes upon and finds simply existing. The knower is an actor, and co-efficient of the truth on one side, whilst on the other he registers the truth which he helps to create. (James 1978, 21)

James argues that the knower is not a "mirror" that "passively" reflects the structure of a pre-made universe. He or she helps to create meaning and truth, an idea that gets developed further in James's formulation of pragmatism. In addition, the essay's stress on the teleological nature of consciousness, its selectivity, and its ability to actively impact the world re-surfaces in James's *Principles of Psychology*.

In June of the same year that this critique was published, Henry Holt & Company contracted James to publish his own *Principles of Psychology*, a project that ended up taking twelve years for him to complete (Perry 1935, Vol. I, 375). Himself an intellectual, Holt read James's critique of Spencer's notion of mind as correspondence but, as a sympathetic follower of Spencer, told James that he went too far in rejecting the importance of environment. James wrote this in response:

My quarrel with Spencer is not that he makes much of the environment, but that he makes nothing of the glaring and patent fact of subjective interests which co-operate with the environment in moulding intelligence. These interests form a true spontaneity and justify the refusal of a priori schools to admit that mind was pure, passive receptivity. (Perry 1935, Vol. II, 35)

Although this reply to Holt, his publisher, is respectful and restrained, one should compare the tone of this letter to one sent about six months earlier to James Putnam:

Your insolent card of May 13 reaches my eyes (by a strange coincidence) just as I return from the last crowning lecture of the course in wh. poor Spencer has been shaken in my jaws as a mouse is shaken by a tiger (as soon as the latter can conquer his native timidity and once fairly take hold of the mouse). The course (I need not say) closed amid the tumultuous, nay, delirious, applause of the students. Poor Spencer, reduced to the simple childlike faith of merely timid, receptive, uncritical, indiscriminating, worshipful, servile gullible, stupid, idiotic natures like you and Fiske! Would I were part of his environment! I'd see if his "intelligence" could establish "relations" that would "correspond" to me in any other way than by giving up the ghost before me! He and all his myrmidons, disciples and parasites!

Down with the hell-sprawn of 'em! Of all the incoherent, rotten, quackish humbugs & pseudo-philosophasters which the womb of all-inventive time has excreted he is the most infamous and "abgeschmackt"—but even he is better than his followers. . . . (Skrupskelis and Berkeley 1995, 563-4)

James's comments about Spencer in this letter were obviously said partially in jest, as evidenced by the way he signed the letter: "Affectly yours / W.J." Nevertheless, the letter's barrage of insults expresses the degree of James's rejection of Spencer's work—a drastic departure from his original opinion of the writer back in the early 1860s! In no other place does James so completely rebuke and insult this popular British theorist.

The Moral Consequences of Spencerian Naturalism: James's Review of Spencer's Data of Ethics (1878)

Despite James's sharp criticism of Spencer, it is not that he found all of Spencer's work utterly useless. "Spencer is an ignoramus as well as a charlatan," wrote James to Carl Stumpf, and yet admitted that his *Data of Ethics* seemed "incomparably his best book" (Perry 1935, Vol. II, 69). Published in a hurry due to Spencer's failing health, the *Data of Ethics* was to serve as preliminary material for his larger project, the *Principles of Ethics*, which was to come out later. In 1879, the same year that James started using Spencer's *First Principles* in his classes, he wrote a review of this work to which I will now turn.

As usual, James begins the review in dramatic terms, comparing the recent popularity of evolutionary thought to "barbarian invaders" who have "swept like a deluge in the decent gardens in which, with her disciples, refined Philosophy was wont to pace, and have left but little of their human and academic scenery erect" (James 1987, 347). James pauses to catch his breath, and then proceeds to outline the essential argument in Spencer's work. First, Spencer argues that for individuals, ethical ideals act as crucial guiding stars for behaviour. To work, they must, however, be embodied in an ideal person, the ethical role model. But can such a role model exist in a thoroughly depraved society? Spencer answers in the negative, emphasizing the power of environment over the power of the individual. His project in the *Data of Ethics* is, therefore, to describe the conditions under which an ideal social state can come into being. Spencer's distinctive move is to say that this kind of ethical societal evolution will happen *naturally* (James 1987, 349). The task of the individual is to make the right choice and "go with the flow" of evolution, so-to-speak. It is not that Spencer ignores the possibility (and even probability) that people will not adjust. Rather, even *those* people, he argues, will be gradually swept away by the positive tide of evolution. Does Spencer's emphasis on the natural unfolding of morality in the world not give free license to those who would act to the contrary? By stressing the naturalness of this process, does one not lose all sense of moral obligation? With these questions in mind, James finds a dangerous side-effect to his theory of moral evolution. It is true, James reasons, that Spencer holds out a long-term incentive for people to do good: if they do so, the force of the universe will be behind them and allow them to survive. "Evolution's fatal tide," writes James, "will leave you naked, and high and dry, unless you join it." This position, however, does not go very far in convincing those who are already ensconced in immorality. For some people, what comes

naturally is anything but ethical. Similarly, it would be hard to argue, says James, that brute force is morally correct "even when evolution is carried on by its means." In this way, he expresses his concern for the way in which Spencer's theory could be conveniently used to legitimize an immoral *status quo* (James 1987, 352).

James concludes his review by returning to one of his favourite themes, human agency: "*what is right means what succeeds*, however fatally doomed to succeed that thing may be, it yet succeeds through the determinate acts of determinate individuals" (James 1987, 352). Morality, argues James, is never separate from the realm of human interpretation and action. It must be actively achieved if it is to "happen" at all. The idea that social change occurs through the collective efforts of individuals stands radically opposed to Spencer's social determinism (James 1987, 353). This theme, as we will see next, reappears in James's "Great Men, Great Thoughts and the Environment" (1880), an essay in which Spencer continues to be the main target.

Agency and Social Change: "Great Men, Great Thoughts and the Environment" (1880)

Those who wish to understand societal change usually demand an explanation for *how* things happen: what caused the American Revolution, the rise of factories in Massachusetts, the onset of the Civil War? According to James, Spencer's mechanistic universe is useless when it comes to dealing with causality. In his universe, each part is snugly fit with the next forming a complex whole that would be permanently altered if a slight change in the world's internal arrangement occurred. This does not make the world fragile and open to influence, as one might suspect. It is, instead, a call for non-intervention since everything—the natural, biological, and social world—runs by its own rules and is already moving in a manner so complex that it is incomprehensible to the outsider. The consequences of this position bother James deeply. Although an omniscient mind might be able to perceive this infinite causal network, human consciousness, he argues, cannot. The human mind always reduces complexity:

The human mind is essentially partial. It can be efficient at all only by picking out what to attend to, and ignoring everything else,—by narrowing its point of view. Otherwise, what little strength it has is dispersed, and it loses its way altogether. (James 1956, 219)

But this is not defeat for James. One does not give up in the face of the complexity Spencer was suggesting. Although consciousness is designed to reduce complexity, the choices one makes can have significant consequences. With this in mind, James questions the implications of Spencer's assertion: what can one do with the claim that everything is somehow related to everything else? While this abstract statement has a certain aesthetic value in that it offers grand fusion, it is useless in practical matters. As James writes, if a captain trying to steer his ship through a battle suddenly "brings a mouldy biscuit into his calculations, [he] would very likely lose the battle by reason of the excessive 'thoroughness' of his mind" (James 1956, 221).

The problem is that Spencer renders all causes *equal in status*, so that one cannot differentiate between close and distant causes. They become one im-

mense, undifferentiated mass that must now be left alone by the scientist rather than picked through. As James satirically puts it, how is one to make sense of a case where a person slips on a patch of ice outside his door? Is the fact that he shared a meal several months ago with thirteen other people the "cause" for his accident? For Spencer, the answer would have to be yes. "There are no accidents, I might say, for science," James writes. "The whole history of the world converged to produce that slip. If anything had been left out, the slip would not have occurred just there and then" (James 1956, 217). James continues:

[According to Spencer,] [a]ll things in the world are fatally predetermined, and hang together in the adamantine fixity of a system of natural law. But in the vagueness of this vast proposition we have lost all the concrete facts and links; and in all practical matters the concrete links are the only things of importance. (James 1956, 219)

In this way, James argues that the claim of infinite relatedness should be the starting-point for science, not its conclusion; it should stimulate further investigation, not stop it (James 1956, 234,245). To say that the universe is too complex to handle is to relinquish one's ability to think and to change things. In terms of causality, James posits "*different cycles of operation* in nature; different departments, so to speak, relatively independent of one another" (James 1956, 220). With this in mind, he can now sort out proximate causes from distant ones, a task which he feels is befitting to science. With regard to society, he rejects Spencer's position that changes occur outside the sphere of human control. Rather, societal changes result from the "accumulated influences of individuals, of their examples, their initiatives, and their decisions" (James 1956, 218). Without the joint efforts of people acting in the world, there would, in fact, be no society.

Until now, James argued that societal change stems from the collective efforts of individuals. By the word "individual," he is not, however, talking about everyone in equal terms. The title of this essay, "Great Men, Great Thoughts and The Environment," clarifies his agenda: James wishes to discuss the role of prominent individuals in the transformation of society and, more broadly, he wishes to examine the relationship between them and their environment. To start with, for reasons stated earlier, James feels that we cannot explain all the infinite causes that went into producing "great men." Rather, we "must simply accept geniuses as data, just as Darwin accepts his spontaneous variations" (James 1956, 226). He then asks: are such people instrumental in shaping history or are they epiphenomenal to it? Do they make a difference to their environment or is the opposite more the case? It quickly becomes clear that James does not want to completely erase the importance of the environment by claiming that our universe is just the product of human effort. Rather, following Darwin, he claims that the environment selects, it "adopts or rejects, preserves or destroys" people. Environment, therefore, does make a difference. "Peter the Hermit," James adds, "would now be sent to a lunatic asylum" and "[a]n Ajax gets no fame in the day of telescopic sighted rifles" (James 1956, 230). If they are accommodated by their socio-historical environment, then the environment itself changes; the world is never quite the same again.

But are "great men" the only people who make a difference? James tempers what some might consider to be a rather elitist notion of social change

by stating that, although geniuses have a “fermentative influence” on society, they are only “one factor in the changes that constitute social evolution” (James 1956, 229). Nevertheless, his essay did draw the fire of Grant Allen and John Fiske, both of whom were sympathetic to Spencer’s positions. They accused James of “hero-worship” (James 1956, 255). James responded with the essay “The Importance of Individuals” which did not find its way into print until 1890. Interesting for our purposes is the way in which James carps on the limitations of Spencer’s all-encompassing theory of a world already completed. Spencer, with Allen following him, prefers to “see things *en gros* and out of focus, rather than minutely” (James 1956, 259). James, now speaking as an empiricist, does not want to concern himself with averages, with sociological constructs that supposedly encompass a large body of complexity. He wishes instead to restore complexity. Although vast propositions can be attractive in terms of their explanatory power, they are often limiting and, in Spencer’s case, not very scientific. “Truly enough,” James writes, “the details vanish in the bird’s-eye view; but so does the bird’s-eye view vanish in the details” (James 1956, 256). In his finale, he reminds Spencer and Allen of the selective and constitutive nature of theorizing:

The preferences of sentient creatures are what *create* the importance of topics. They are the absolute and ultimate law-giver here. And I for my part cannot but consider the talk of the contemporary sociological school about averages and general laws and predetermined tendencies, with its obligatory undervaluing of the importance of individual differences, as the most pernicious and immoral of fatalisms. Suppose there is a social equilibrium fated to be, whose is it to be,—that of your preference, or mine? Their lies the question of questions, and it is one which no study of averages can decide. (James 1956, 261-2)

In this way, James stresses the way in which preferences inform theorizing. He wishes to drive home the idea that one comes to science with the wish to solve certain problems, with *interest* in its fullest sense. James says this not to have science melt into a slop of subjectivity, but to remind his readers that the laws, theories, and hypothesis people generates are *theirs* and should serve their purposes. If one fails to ask future-oriented questions, about purposes and consequences, then one has been enslaved by one’s own creation.

While James was busy defending his critique of Spencer, the latter’s fame was perhaps at its peak (Hofstadter 1944, 48). In 1882, he made his one and only visit to America, meeting with American leaders from various fields. James, not surprisingly, did not attend. Although Henry Holt waited twelve long years, James finally came out with *Principles of Psychology* in 1890 in which many of the ideas which surfaced in the critiques of Spencer reappear—especially his arguments about the active and teleological nature of consciousness.

The Final Critiques: Two Memorial Essays Following the Death of Herbert Spencer

(a) “Herbert Spencer Dead” (1903)

After the death of Spencer in 1903, James wrote a memorial essay in the *New York Evening Post*, “Herbert Spencer Dead,” one that portrayed him in the most generous light that he could muster. Of course, James notes from the

outset that Spencer's mind seemed "so fatally lacking in geniality, humor, picturesqueness, and poetry, and so explicit, mechanical, so flat in the panorama which it gives of life" (James 1978, 96). The mechanistic quality to Spencer's thought exists side-by-side, however, with a competing tendency, one which James appreciates a great deal. Spencer's "heroic defense of individualism" and his disdain for state controls, as presented in his ethical and political works, struck a sympathetic chord in James (James 1978, 99). It was only when Spencer undermined free-will and individual agency, when he dissolved all of life's details into general principles, and when he attempted to freeze the universe into the mould of his own theories, that he drew the wrath of James.

Out of all his works, the *Data of Ethics* receives the most praise as "unquestionably the most valuable single part of the *Synthetic Philosophy* not for the reason that it makes ethics for the first time 'scientific' . . . but because it gave voice with singular energy to one man's ideals concerning human life" (James 1978, 100). Once again, James displays his belief in the importance of passionate ideals, localized in a person and not hanging in metaphysical space, which can play an important role in shaping the future of a community. As for *The Principles of Biology*, *The Principles of Psychology* and *The Principles of Sociology*, James is less enthusiastic and feels that they "must soon become obsolete books," although he does note that both the *Psychology* and the *Sociology* contain at least some merit. What of the *First Principles*, the work that James first encountered in the early 1860s? He notes that unfortunately for Spencer, the *First Principles*, his weakest book, has remained the most popular piece of the *Synthetic Philosophy* (James 1978, 100).

James's characterization of Spencer's intellectual style is revealing. He labels Spencer a deductive thinker who begins with "universal abstract principles" and *then* moves on to the facts (James 1978, 98). The empirical, inductive spirit seems noticeably absent in his work. Despite the flood of facts, James sees Spencer's myriad volumes as having a monotonous refrain. "Another [type of critic]," James writes, "has likened him to a kind of philosophic saw-mill, delivering, year in and out, with unvarying rectilinear precision, paragraph after paragraph, chapter after chapter, and book after book, as similar one to another as if they were so many wooden planks" (James 1978, 97). James was careful, however, not to force Spencer into as rigid a framework as Spencer himself put the world in. The competing tendencies of his thought, one of the British individualistic strand, and the other of evolutionism, reflects the complexity of his person.

(b) The Last Critique: "Herbert Spencer" (1903)

In "Herbert Spencer," an essay published in the *Nation* the same year he died, James is cautious not to put Spencer into too small a conceptual box. "In Spencer, as in every concrete individual, there is a uniqueness that defies all formulation." "Greatness and smallness," James continues, "surely never lived so closely in one skin together" (James 1978, 107-108). From the start, he commends Spencer on his ambitious project of trying to deal with *everything*—from physics and chemistry to politics and aesthetics. He credits Spencer for being the first to see evolution as a universal principle and driving this theory to its absolute limits. And yet his grand synthesis, like his intellect, has for James an "awful monotonous quality" to it. James, once again, men-

tions the dryness and narrowness of Spencer's vision and the fact that his work, while stimulating in its vastness, is "almost a museum of blundering reasoning" (James 1978, 116).

Even if a mechanistic universe was Spencer's goal, he did not do a good job of describing its parts or processes. "An honestly mechanical reader," James adds, "soon rubs his eyes with bewilderment at the orgy of ambiguity to which he is introduced" (James 1978, 118). By this, James is referring to the way in which Spencer would casually slide between the technical meaning of terms like "coherent," "definite," and "force" and their broader resonances. This is, after all, how he manages to wrap the entire social, cultural, biological, and natural world together in a neat conceptual package. He uses one set of vocabulary for everything. "Integration," for example, in a narrow sense means a "definite coherence." But does the term "integration" really encompass everything from "the contraction of the solar nebula" and "the formation of the earth's crust," to "the dropping of terminal inflexions in English grammar" and "the formation of general concepts by the mind"? (James 1978, 118). For James, Spencer collapses significantly different phenomena under vague headings, and then assumes that these headings represent deep structures of the universe. After exposing the ambiguity of Spencer's key terminology, James puts down his pen, adding that the "task of a carper is repugnant" (James 1978, 120). In closing, he retrieves as much as he can from Spencer, commending him on his *Psychology* which he feels is a unique contribution to the field due to his emphasis on the importance of environment. Although James thinks he went too far and erased mental agency in this process, his inclusion of environmental forces was "a master stroke."

In the end, James himself puts aside his own narrow construction of Spencer in order to remind his audience of the limits of thematizing life. In a touching finale, he writes that Spencer himself "was no abstract idea; he was a man vigorously devoted to truth and justice as he saw them, who had deep insights, who finished, under terrible frustrations from bad health, a piece of work that, taken for all in all, is extraordinary" (James 1978, 122). James's unwillingness to characterize Spencer as Spencer himself characterized the universe—that is, as a flat and monotonous repetition of a single theme—compels him to finish his essay with the following words:

A human life is greater than all its possible appraisers, assessors, and critics. In comparison with the fact of Spencer's actual living, such critical characterization of it as I have been at all these pains to produce seems a rather unimportant as well as a decidedly graceless thing. (James 1978, 122)

James is faithful to his own belief that people, like anything in the realm of experience, can never be stuffed once and for all into a single conceptual box. In this final reflexive moment, James sets Spencer free, allowing him to exit the narrative in which he was ensnared.

Concluding Remarks: Is Constructivism the Opposite of Objectivism?

While few would deny that James can be labelled a "constructivist," what kind of constructivist is not immediately clear. For heuristic purposes, I would like to highlight three features that characterize James's pragmatic constructivism, features which emerged during the course of his critique of Spencer.

In place of Spencer's unyielding environment to which individuals must mould themselves, James argues for an interactive, co-evolutionary relationship between mind and world, individual and environment: mind is a creative participant in mind-world interactions, individuals are agents in individual-society interactions, and those who do science are, by logical extension, as implicated in truth-making as the world which they try to objectively describe. This co-evolutionary process does not release cognition or selves from the environment's orbit, allowing them to spin off freely through space, but rather situates them in a larger context in which they are active and creative agents.

James's belief that cognition and social action exist in an organic relationship with the environment suggest that the knowledge and behaviour that gets constructed in the wake of this reciprocal process has significant constraints on it. Perhaps most importantly, James's constructivist arguments are not set forth in a strictly objectivist framework, as accounts that supposedly reflect the structure of the universe or the final nature of the mind. Rather, they are treated instrumentally as provisional hypotheses that inform lines of inquiry, steer action, in short, *do* things for us. He did not try to replace Spencer's putatively final account of how the world works with his own. This last point is especially relevant for modern-day constructivists. To claim to have finally "got it" with constructivism, dubbing it the only viable alternative to objectivism for use in all situations and at all times, would be to do what James's accused Spencer of doing—of trying to colonize the whole of life with a single paradigm that is itself neither up for examination, nor powerful enough to explain everything. In this concluding section, I will examine some of the criticism that Ernst Von Glasersfeld's "radical constructivism" has generated while keeping these three features in mind.

Interestingly, Von Glasersfeld (1995) makes William James out to be one of the past masters of the radical constructivist tradition, and alludes to James's critique of Spencer to support this. Von Glasersfeld sees the following statement by James to be supporting the idea that an independent, objective world is not accessible as the objectivists say it is: "To be fertile in hypothesis is the first requisite, and to be willing to throw them away the moment experience contradicts them is the next" (cited in von Glasersfeld 1995). The conclusion Von Glasersfeld draws is that James "is speaking of 'experience,' not of a world as it might be in itself," and says that this reading is justified when one takes into consideration James's later writings on pragmatism. The ability to "throw away" hypotheses if they contradict experience is not, I would suggest, simply another way of phrasing Piaget's adage which Von Glasersfeld frequently cites—"the mind organizes the world by organizing itself" (von Glasersfeld 1995, 57). It is instead an expression of James' characteristic openness to change and of his belief in the iterative nature of the scientific enterprise. Von Glasersfeld, however, interprets the word "experience" in the passage cited in what is perhaps an overly cognitivist manner. Does James feel that "all kinds of experience are essentially subjective" and are "in the heads of persons" (von Glasersfeld 1995, 1). For James, it is not all in the head, nor is it all in the environment. As Eric Brede writes, James saw "human mental life as a factor inside of the process of evolution which it helps to alter, rather than viewing evolution as mostly mindless, like the Spencerians, or as directed by an absolute Mind, like the Hegelians" (Brede 1996, 5).⁵

If one accepts, as James certainly did, that consciousness is an active and creative agent, must one also accept the position that it is not possible to gain access to a pure, untouched world “out there”? As Michael Matthews writes, this “one-step argument from the psychological premise ‘the mind is active in knowledge acquisition’ to the epistemological conclusion ‘we cannot know reality’ is endemic in constructivist writing” (Matthews 1992, 306). If we consider the following description of radical constructivism in Von Glasersfeld’s latest book, we might be in a better position to examine this issue:

What is radical constructivism? It is an unconventional approach to the problems of knowledge and knowing. It starts from the assumption that knowledge, no matter how it be defined, is in the heads of persons, and that the thinking subject has no alternative but to construct what he or she knows on the basis of his or her own experience. What we make of experience constitutes the only world we consciously live in. It can be sorted into many kinds, such as things, self, others, and so on. But all kinds of experience are essentially subjective, and though I may find reasons to believe that my experience may not be unlike yours, I have no way of knowing that it is the same. (von Glasersfeld 1995, 1)

He elaborated this position into two principles, each comprised of a sub-claim:

1. Knowledge is not passively received either through the senses or by way of communication; knowledge is actively built up by the cognizing subject.
2. The function of cognition is adaptive, in the biological sense of the term, tending towards fit or viability; cognition serves the subject’s organization of the experiential world, not the discovery of an objective ontological reality. (von Glasersfeld 1995, 51)

The statement that “all kinds of experience are essentially subjective” and the use of the term “cognizing subject” in the two principles he outlines invokes the old objectivist scheme of a subject confronting an independent, outer world. In this way, Von Glasersfeld appears to be among those constructivists whom Barbara Herrnstein Smith characterizes as “objectivists standing on their heads,” those that simply invert the objectivist position (Herrnstein Smith 1988, 151): the objectivist belief in the possibility of gaining knowledge about a single, independent world is replaced by the radical constructivist belief in the *impossibility* of such knowledge. This skeptical, anti-realist position operates squarely within the terms of realism. This point is well made by Michael Matthews who tries to “rescue good constructivist pedagogy from the deficient theory that parented it” (Matthews 1992, 303). As with Herrnstein Smith, Matthews recognizes that some constructivists do not go far enough in rejecting such parentage:

My criticism in brief is that constructivism maintains the widespread, commonsensical, subject-centered, Aristotelian-empiricist epistemological paradigm, and by correctly pointing to a major error in empiricist assumptions, it then swings to a relativist epistemology without abandoning the paradigm itself. The relativist conclusion only follows within the empiricist paradigm, if this paradigm is rejected—and there are good reasons for so doing—no such relativist epistemological conclusions follow, and certainly no idealist ontological conclusions follow. (Matthews 1992, 304)

Radical constructivists, in short, still operate within a paradigm that sets the realm of subjective experience against an independent, objective world, only now it is a world about which one can no longer speak and can never really know. Although they can now allow for much individual variation, a useful position for those who like progressivist pedagogy, they inherit a host of thorny philosophical problems in the eyes of their critics.

Constructivism and Educational Studies

As Michael Matthews writes, "one does not need to be a constructivist to agree with most of their pedagogical claims" (Matthews 1992, 310). In fact, when constructivist claims are translated into pedagogical practices, the results often appear to be a mere recapitulation of progressivist themes (Phillips 1995, 11). While the pedagogical implications of radical constructivism may not be all that revolutionary, other forms of constructivism have clearly had a profound effect on the trajectory of educational research. Many educational researchers in recent years (especially those in sociology and anthropology of education) have been influenced by critiques of traditional epistemology that have surfaced in disciplines such as philosophy and literary criticism, while others have joined with social constructionists in sociology who consider the "given, unalterable, and self-evident" quality of everyday experience to be the result of social processes (Berger and Luckmann 1966, 59). The proliferation of educational literature bearing the title of "the social construction of X" is testimony to this.⁶ Consider also "social reproduction" theory which has been flourishing since the 1970s. In contrast to meritocratic ideology which portrays schools as mere "springboards for upward mobility," this tradition has tried to show how educational institutions are implicated in the "reproduction" of social and economic inequality (Levinson, Foley, and Holland 1996, 5). This line of research would be inconceivable without the constructivist insight that arbitrary social hierarchies of various sorts are *made* to seem natural and God-given.

Whether one draws one's inspiration from social constructionism, Von Glasersfeld's radical constructivism, or James's pragmatic constructivism, one faces a common tension concerning the status of one's own claims. In this regard, Woolgar and Pawluch accuse certain social constructionists of "ontological gerrymandering," of advancing their own position on how things *really* are under the guise of neutrally revealing their constructed nature (Woolgar and Pawluch 1985). Similarly, Phillips takes Von Glasersfeld to court for metaphysical claims he denies having made (Phillips 1996, 20). Despite Von Glasersfeld's plea that the reader not take his text to be advancing a metaphysical argument, he does occasionally use language that make such accusations stick. When, for instance, he encourages the reader to become one who "steps out of the philosophical tradition and questions the illusory goal of attaining true representations of a real world," and when he writes that "[a]ny notion that cognitive structures could come to reflect ontological reality . . . is an illusion" (von Glasersfeld 1995, 25,74), does this not make him sound like an anti-foundational foundationalist, as Stanley Fish (1985) would say? This talk of getting beyond an illusion threatens to push him back into an illusion/reality metaphysical argument—of one *really* real world lying beneath a thick patina. In short, he seems to operate within the objectivist framework instead of thoroughly dropping it as he claims.

These tensions are not by any means unusual, but exist for any constructivist who is tempted to pursue the traditional drive towards philosophical closure. Those who bring their fist down on the table declaring that this is how knowledge or cognition really works, place themselves in an awkward, if not contradictory, position. Richard Rorty's distinction between "edifying" and "systematizing" philosophy is germane here. The former strives "to keep the conversation going rather than to find objective truth" (Rorty 1980, 377). The latter lacks the kind of historicism which is needed to see that one is always acting within a changing discursive horizon. About theorists like James, Dewey, the late Wittgenstein, and others, Rorty aptly writes that "[t]hey have kept alive the historicist sense that this century's 'superstition' was the last century's triumph of reason," and thus they could foresee the obsolescence of their own work. "They know," Rorty adds, that "their work loses its point when the period they were reacting against is over" (Rorty 1980, 369). By revisiting James's critique of Spencer, one not only gains suggestions for present-day constructivist theorizing in education, but becomes cognizant of the horizons in which such debates emerge. James, for instance, would not have made his point about the active and teleological nature of mind so forcefully had Spencer not so systematically erased it. Through historicizing constructivist arguments, one short-circuits the tendency to turn constructivism into yet another putatively timeless philosophical account about the way things really are—an effort that would be like trying to add a supplemental volume entitled "The Principles of Constructivism" to Spencer's nomothetic canon. An ample dose of historicism is, in short, often a useful antidote against dogmatism.

James's most important contribution lies precisely in his effort to resist seeking a rational high-ground from which to supposedly gaze down upon the world below and trace its contours, as he saw Spencer trying to do. If constructivist discourse is to own up to its own embeddedness, then there can be no comfortable, context-free zone in which to rest. James, who was ever conscious of the fact that his ideas and methods were contingent, albeit useful tools, urges us in the last sentence of the briefer version of his *Principles of Psychology* "never to forget that the natural-science assumptions with which we started are provisional and revisable things" (James 1985, 335). Constructivists who wish to retain this pragmatic openness and flexibility, characteristics that their own theory seems to demand, might do well to follow his lead and, thus, keep in mind Barbara Herrnstein Smith's remark that "[t]he truths of constructivism are not ontologically prior—already constituted (made up), waiting only to be discovered by the duly alert and acknowledged by the duly astute" (Herrnstein Smith 1992, 428). To do otherwise is to risk forgetting the ground upon which one stands, a move that is typical of, but certainly not limited to, objectivists.

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Notes

¹In his "The Good, the Bad and the Ugly: The Many Faces of Constructivism," Phillips (1995) provides three dimensions or axes on which to situate a constructivist: (1) "individual psychology versus public discipline," (2) "humans the creators versus nature the instructor," and (3) active construction as an individual cognitive process or as social and political processes. For an outstanding review of the numerous strands of constructivism in twentieth-century, Euro-American intellectual thought, see chapter two of Kenneth Gergen (1994), 30-63.

²I use the term *pragmatic constructivism* and not *constructionism* because the latter term is too reminiscent of the "social constructionism" of the Berger-Luckmann variety (see Peter L. Berger & Thomas Luckmann, *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, 1966). James does not appear to share the same sociological sensitivity that those writing in this tradition possess. James' oft-cited individualism is tempered, however, by his acknowledgment of environmental constraints. I use the modifier "pragmatic" primarily to stress the anti-dogmatic flavour of James' constructivism.

³By "critique," I mean James's published lectures, essays and memorials whose explicit target is primarily Herbert Spencer. These will be (1) "Remarks on Spencer's Definition of Mind" (1878); (2) "Spencer's Data of Ethics" (1878); (3) "Great Men, Great Thoughts and the Environment" (1880); (4) "Herbert Spencer Dead" (1903); (5) "Herbert Spencer" (1903). See William James, *Pragmatism and Four Essays from the Meaning of Truth*, 1955; *The Will to Believe and Other Essays in Popular Philosophy*, 1956; *The Works of William James: Essays in Philosophy*, 5, 1978; *Psychology: The Briefer Course*, 1985; *The Works of William James: Essays, Comments, and Reviews*, 1987.

⁴Although this might sound familiar to many with constructivist sympathies, I would caution the reader against conflating the kind of constructivism that James exhibits in his critiques of Spencer with some of the more recent varieties, particularly with that of "radical constructivism."

Although I have polarized the ideas of James and Spencer for heuristic purposes, similarities certainly exist. If nothing else, James's strenuous rejection of Spencer supports Hofstadter's remark that "[i]n the three decades after the Civil War, it was impossible to be active in any field of intellectual work without mastering Spencer" (Hofstadter 1944, 33). In this paper, I have not teased out the points of similarity between James and Spencer, nor attempted to provide a balanced debate between them. That never took place. James never met Spencer and never corresponded with him. Instead, Spencer became James's own "social dope" of sorts, and functioned as a vehicle for the articulation and development of his own ideas. In short, I have revisited James's critique of Spencer primarily to explore the philosophical substance of his own arguments—even though I may be guilty of reproducing a two-dimensional Spencer—James's Spencer—in the process.

⁵When some writers invoke constructivist arguments and begin to speak about how gender, race, knowledge, and so forth are "made," "created," "produced," or "constructed," there is a tendency to think that this means such

constructions are utterly arbitrary. For James, however, construction means building *on* and *with* what is already there. In his *Psychology*, for instance, he eloquently affirms the power of social conditioning on the individual in his chapter on habit: "You see the little lines of cleavage running through the character, the tricks of thought, the prejudices, the ways of the 'shop,' in a word, from which the man can by-and-by no more escape than his coat-sleeve can suddenly fall into a new set of folds" (James 1985, 11). Along similar lines, in *Pragmatism* he responds to those who charge that pragmatists "destroy all objective standards" (James 1955, 151-2). James drives home the idea that although truth is "made" rather than "discovered," it must satisfy a tough set of criteria, a point that runs counter to those who think that he is talking about truth as *merely* constructed (that is, whatever is convenient, whatever one thinks it should be, whatever the majority thinks it is, and so forth). In this way, James's pragmatic constructivism is not of the "anything goes" variety. For a lucid and systematic response to critics of anti-foundationalist positions, see Herrnstein Smith's *Contingencies of Value* (1988), p. 152.

⁶ Among the numerous examples, one finds titles such as "The Social Construction of Ability in Elementary School" (Simpson 1975), "The Social Construction of Learning" (Bredo, 1996), and "The Social Construction of Literacy" (Cook-Gumperz 1986). Although many writers employ the title "social construction," not all abide strictly by the theoretical scheme presented in Berger & Luckmann's classic work, *The Social Construction of Reality* (1996).

Bibliography

Andersen, Milton L. (1991). The Many and Varied Social Constructions of Intelligence. In *Constructing the Social*, edited by T.R. Sarbin and J.I. Kit-suse. London: SAGE Publications.

Berger, Peter L., and Thomas Luckmann (1966). *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. New York: Anchor Books.

Boller, Paul F. (1969). *American Thought in Transition: The Impact of Evolutionary Naturalism 1865-1900*. Chicago: Rand McNally & Company.

Bredo, Eric (1996). The Social Construction of Learning. In *Handbook of Academic Learning: The Construction of Knowledge*, edited by Gary D. Phye. San Diego, CA: Academic Press.

Cook-Gumperz, Jenny (Ed.) (1986). *The Social Construction of Literacy*. New York: Cambridge University Press.

Fish, Stanley (1985). Consequences. In *Against Theory: Literary Studies and the New Pragmatism*, edited by W. J. T. Mitchell. Chicago and London: The University of Chicago Press.

Fish, Stanley (1989). *Doing What Comes Naturally*. Durham: Duke University Press.

Garfinkel, H. and H. Sacks (1970). The Formal Properties of Practical Actions. In *Theoretical Sociology*, edited by J.C. McKinney and E.A. Tiryakian. New York: Appleton-Century-Crofts.

Gergen, Kenneth J. (1994). *Realities and Relationships: Soundings in Social Construction*. Cambridge: Harvard University Press.

- Herrnstein Smith, Barbara (1988). *Contingencies of Value: Alternative Perspectives for Critical Theory*. Cambridge: Harvard University Press.
- Herrnstein Smith, Barbara (1992). Making (Up) the Truth: Constructivist Contributions. *University of Toronto Quarterly*, 61(4):422-429.
- Hofstadter, Richard (1944). *Social Darwinism in American Thought*. Boston: Beacon Press.
- James, William (1955). *Pragmatism and Four Essays from the Meaning of Truth*. New York: Meridian Books.
- James, William (1956). *The Will to Believe and Other Essays in Popular Philosophy*. New York: Dover Publications.
- James, William (1978). *The Works of William James: Essays in Philosophy*. Vol. 5. Cambridge: Harvard University Press.
- James, William (1985). *Psychology: The Briefer Course*. Notre Dame: University of Notre Dame Press.
- James, William (1987). *The Works of William James: Essays, Comments, and Reviews*. Cambridge: Harvard University Press.
- James, William (1990). *The Varieties of Religious Experience*. New York: Vintage Books.
- Levinson, Bradley A., Douglas E. Foley, and Dorothy C. Holland (Eds.) (1996). *The Cultural Production of the Educated Person: Critical Ethnographies of Schooling and Local Practice*. New York: State University of New York Press.
- Matthews, Michael R. (1992). Old Wine in New Bottles: A Problem with Constructivist Epistemology. In *Philosophy of Education 1992. Proceedings of the Forty-Eighth Annual Meeting of the Philosophy of Education Society* edited by H. Alexander. Urbana, IL: Philosophy of Education Society, University of Illinois.
- Perry, Ralph Barton (1935). *The Thought & Character of William James*. 2 vols. Boston: Little, Brown & Company.
- Phillips, D.C. (1995). The Good, the Bad, and the Ugly: The Many Faces of Constructivism. *Educational Researcher*, 24(7):5-12.
- Phillips, D.C. (1996). Response to Ernst von Glasersfeld. *Educational Researcher*, 25(6):20.
- Rorty, Richard (1980). *Philosophy and the Mirror of Nature*. Princeton: Princeton University Press.
- Skrupskelis, Ignas K., and Elizabeth M. Berkeley (Eds.) (1995). *The Correspondence of William James*. Vol. 4. Charlottesville: University Press of Virginia.
- Spencer, Herbert (1872). *First Principles of Philosophy*. New York: D. Appleton and Company.
- von Glasersfeld, Ernst (1995). *Radical Constructivism: A Way of Knowing and Learning*. Edited by P. Ernest. Vol. 6. *Studies in Mathematics Education Series*. London: The Falmer Press.
- Woolgar, Steve, and Dorothy Pawluch (1985). How Shall We Move Beyond Constructivism? *Social Problems*, 33(2):159-162.