

# The Metaphysics and Logic of Psychology: Peirce's Reading of James's *Principles*\*

## Introduction

Much has been written lately on Peirce, James, and on their respective pragmatisms.<sup>1</sup> The comparison between the “two pragmatisms” has — sometimes — contributed to a better understanding of both thinkers, and to an appreciation of what could still be expected from pragmatism. The story and context of the genesis of pragmatism are also better known and have met the interest of a large audience, of which the success of a recent account of the “Metaphysical Club” and of the intellectual atmosphere of Cambridge in the 1870s is a striking example.<sup>2</sup> However, if a system is made of many “fibres”, as Peirce claimed in 1868 (W2:213), pragmatism is only one of them, and it should not obscure other important aspects.

As far as these other aspects are concerned, Max Fisch, in his path-breaking “Chronicle of Pragmatism, 1865-1879,”<sup>3</sup> held — in 1965 — that the relationship between the genesis of pragmatism and the “experimental psychology of Fechner, Helmholtz and Wundt” had still to be “broached”. Nearly forty years after this statement was made, it still applies, if one considers Peirce’s life-long discussion with psychology.<sup>4</sup> Certainly, Cadwallader, in his pioneering works on Peirce as experimental psychologist, has helped to qualify the harsh opposition between “Peirce the logician” and “James the psychologist”. Moreover, some recent papers have explored other aspects of Peirce’s relevance for psycho-physics and psychology at large.<sup>5</sup> Peirce’s *philosophy* of psychology, which cannot be confined to the texts explicitly devoted to psychology, nevertheless remains in large part unexplored. My guess is that a careful examination of the *locus* where these two lacunas — on Peirce and James, and on Peirce’s approach to psychology — meet can provide useful insights on Peirce’s philosophy of psychology. Since Peirce very often refers to James as a “great psychologist” and even to the *Principles* as an “athlete-thinking” work,<sup>6</sup> it is natural to try and find what in James’s psychology justified this statement, from

Peirce's standpoint. Here, scholarship is not so extensive as with regard to the issue of the "Two Pragmatisms."

The point is not merely historical, no more than it is confined to psychology. It is not merely historical: James's *Principles* still raise reactions in the field of psychology itself. The amount of publications which immediately followed the centenary of the *Principles* seems to confirm that James's 'legacy' meets current concerns in numerous fields of cognitive science, in self theory and in the study of affects.<sup>7</sup> This legacy is not confined to psychology: James's *Principles* have, very early, drawn, and they still draw, *philosophical* reactions and criticisms. The reason for this is obvious: most of the problems which were developed in the two volumes have far-reaching philosophical bearings. James's approach to perception and his critique of Helmholtz can engage a dialogue with philosophical attitudes which have set the stage for more than a century,<sup>8</sup> his texts on emotions have recently been re-explored in detail as an alternative to classical dualism between mind and body,<sup>9</sup> his views on consciousness, in particular as supplemented by "Does Consciousness Exist?", still invite discussion with present positions on this very topic,<sup>10</sup> not to mention affinities with some trends in naturalized epistemology.<sup>11</sup> This does not mean that the philosophical reception of James's psychology went without perplexities and criticisms. Wittgenstein's reading of the *Principles* is paradigmatic of this attitude, insofar as he made many explicit and tacit references to them *and* urged severe criticisms, as to state: "how needed is the work of philosophy is shown by James's psychology."<sup>12</sup> It is tempting to claim that Peirce had, long before him, endorsed such a view, as the present inquiry will try to make clearer. The *Principles* called for such a "work of philosophy", and Peirce read them from such a perspective. His voice in this debate has still to be recovered, and a close examination of his remarks on the *Principles* might help to make it more audible.

The present paper deals thus with some fundamental agreements and disagreements between Peirce and James, on crucial issues such as perception and consciousness. When Peirce first read the *Principles*, he was sketching his theory of the categories, testing its applications in many fields of knowledge, and many investigations were launched, concerning indexicals, diagrams, growth and development. James's utterances led Peirce to make his own views clearer on a wide range of topics that go to the heart of the foundations of psychology and that involve the relationship between perception and logic, between consciousness and the categories, between abstraction and the 'stream of thought'. The idea is to show that Peirce detected important discoveries and insights in the *Principles*, but felt that James could not make proper use of them because of logical confusions, and also because of his "clandestine" metaphysics. The point in this essay is thus not to look for remains of psychologism in Peirce's writings,<sup>13</sup> but to look at Peirce's comments about James's psychology in an attempt to identify where and why Peirce amended James's views. Since the project to provide some insight on Peirce's extensive reading of James's *Principles*

of *Psychology* would deserve a full volume, I shall focus here on three occasions where Peirce explicitly commented on James's *Principles*. In the first section, I shall consider his assessment of James's chapter on space, which was published as a series of articles in 1887, in *Mind*. I shall then turn to the 1891 review of the *Principles* in *The Nation* for important complements on perception as inference. In the third section, I shall deal with Peirce's manuscript "Questions on James's *Principles*" (R1099). These "Questions" reveal a deep interest in psychological problems and suggest different ways along which Peirce's new advances in the field of the categories, of continuity, and abstraction could provide a proper basis for the philosophy of mind.

### I. Peirce, James and the Perception of Space

"It is no joke slaying the Helmholtzes  
as well as the Spencers."<sup>14</sup>

Space-perception, since the epoch-making publication of Helmholtz's *Physiological Optics* (1861-67) and of Wundt's *Beiträge Zur Theorie der Sinneswahrnehmung* (1858-1862), has been a famous bone of contention between psychologists, in a field divided between the followers of Helmholtz, assuming that spatial relations were inferred by the mind, and the followers of Hering, who claimed that they were sensational through and through. Both Peirce and James had firsthand knowledge of these texts. Peirce was well acquainted with Wundt's writings since the 1860s, even obtaining the translation rights for Wundt's 1863 *Vorlesungen Über die Menschen und Thierseele*, and expressing his interest in Helmholtz's views very early. In his review of Fraser's Edition of Berkeley's *Works*, he claimed that, as far as theories of vision were concerned, the "best authorities [...] prefer the empiricist hypothesis [i.e.: Helmholtz's views], the fundamental proposition of which, as it is of Berkeley's, is that the sensations which we have in seeing are signs of the relations of things whose interpretation has to be discovered inductively" (1871, 8.36). As years went by, Peirce made several other references to these views: "That space is not immediately perceived is now universally admitted; and a mediate cognition is what is called an inference" (1878, W3:317). On the other hand, James, who was acquainted with Helmholtz from the 1860s,<sup>15</sup> submitted the Helmholtzian strand in psychology to severe criticism: as early as 1876, James claimed Helmholtz's unconscious inferences were not the "last word of wisdom in the study of perception" (W:Eph:6), a suspicion which took the form of a first paper dealing with space properly so called, "The Spatial Quale", in 1879, and, nearly ten years later, in the *Mind* series on "The Perception of Space".

It is within this context that the first discussion to be considered takes place. In 1887, Peirce wrote a short letter to James commenting on the latter's "admirable work on Space,"<sup>16</sup> and expressed both interest and reservations. On a first reading, these might remain quite difficult to delineate exactly. The letter opens with a striking diagnosis: "The impression made upon me is that your

assertions will many of them stand, but your denials of the usual philosophy will fall" (COWJ, 6:279). Peirce is not willing to accept James's "denials" of traditional approaches of space-perception, and it soon appears that the reasons for this are closely linked to the idea of a "first sensation": "I fancy that all which is present to consciousness is sensation & nothing assignable is a first sensation (...) I cannot as yet bring myself to see that size is so nearly a primary sensation as red or blue."<sup>17</sup> These reservations are interesting, for they suggest that Peirce had, from 1887 on, a good insight into James's overall psychological project, and that he departed from James on what was to become one of the main theses of the *Principles*: the idea that there is a spatial *qualia* and that there could be some *first* "psychical things". Peirce's hints, here, are quite precise — they refer to several ideas developed in the second and third papers on Space — but they might remain quite puzzling as such, until the "denials" and the "assertions" referred to can be identified. What exactly the "usual philosophy" was, and what were James's criticisms of it were, is less obvious now than in 1887. I shall try first to shed some light on this context. In the second part of this section, I shall turn to the positive part of the letter, where Peirce alludes to the "synthesis of fragmentary spaces": keeping in mind that Peirce was then in the process of writing his "Guess at the Riddle", an obvious analogy between the second paragraph of the letter and some passages from the "Guess..." stands out.

### *The "Denials of the Usual Philosophy"*

Peirce's reservations, though they are qualified,<sup>18</sup> aim at the core of James's strategy — at his critique of the traditional philosophy of perception, a philosophy which was largely built on Kantian grounds, revised in the light of the new psycho-physiology.<sup>19</sup> As I just mentioned, James felt quite early that the criticism and refutation of Helmholtz's views on perception were a priority in his philosophical agenda:<sup>20</sup> James's own theory of space is one of the most elaborate and earliest parts of the book,<sup>21</sup> and it is indeed possible to read a large part of the *Principles* — not only the sections related to sensation and perception — as a critique of the *Physiological Optics* and of its implicit philosophy of mind. In order to understand Peirce's diagnosis, it is important to see that James accomplishes two things in his critique. Firstly, he defends his own thesis on the direct perception of extension. *Secondly*, he again assails what he holds to be a fallacious philosophy of mind. Both arguments are linked, due to the fact that Helmholtz, in developing the theory of perception as unconscious inference, where space-relations are so to speak *inferred* by the mind, was at the same time guilty of introducing "mythological entities" in the philosophy of mind:

It is when we come to analyze minutely the conditions of visual perception that difficulties arise which have made psychologists appeal to new and quasi-mythical mental powers. (*Mind*, 1887, p. 321, PP2:211)

These notorious "difficulties" include the blind spot "filling-in", the theory of local signs, and the problem of visual illusions. Helmholtz, whose thesis is often summed up as the idea that *sensations are signs whose interpretation is left to the understanding*,<sup>22</sup> relies on "quasi-mythical" powers and "mythological views"<sup>23</sup> when he attributes the production of perception to the mind, and when he introduces a spontaneity that would be responsible for the organization of sensations. The "Empiristics" in optics — meaning those who would follow Helmholtz in assuming that space-relations are not raw biological data but emerge in the course of *experience* as interpreted by the understanding — are not the only philosophers to appeal to those powers. However, in their writings, this appears in a striking and paradoxical way, for they assume that the mind *produces* perceptions and that the latter are the *conclusions* of an inferential mechanism. It is thus quite easy to see that this epistemic position has considerable philosophical implications, which make the "Empiristic" in optics side with the opponents of empiricism in philosophy, as the following comments by James will illustrate:

This is why the "Empiristic" school in optics has been welcomed with such acclamations by all the "A-priorists" in philosophy. The notion of an Intellect unconsciously making inferences, even down in the depths of what seems mere passive feelings of color and shape, could not but please all whose prejudices are in favor of the mind's productive activity.<sup>24</sup>

Such is the "usual philosophy" denied by James in his series of papers on space and later in the *Principles*, and this is the root of his account of space. Helmholtz and Wundt, the two main advocates of the "unconscious inference" theory, are trapped in the "psychologist's fallacy,"<sup>25</sup> that is, they attribute to a *tacit* knowledge properties that are typical of an *explicit* knowledge,<sup>26</sup> and they are thus led to attribute to the experience of space-relations some predicates characteristic of our knowledge-about space.<sup>27</sup> James's criticisms and "denials", as we can see, are very close to what we would today call the criticism of the "homunculus fallacy". That is to say, he denies his opponents the right to treat their alleged unconscious sensations as if they were identical with explicit cognitive states, which would only be hidden from consciousness.<sup>28</sup> On the contrary, James admits that retinal sensations, like all sensations, are spatial from the beginning, that space-relations have no psychical or logical antecedents:

Retinal sensations are spatial; and were they not, no amount of 'synthesis' with equally spaceless motor-sensations could intelligibly make them so. [...] In calling the quality in question a *sensational* quality, our

own account equally disclaimed ability to analyse it, but said its antecedents were cerebral, not psychical — in other words, that it was a *first* psychical thing. (*Mind*, 1887, p. 544, PP2:278)

The destructive part of the argument leads then to a positive thesis about the sensational nature of space, and this is where James is the closest to Shadworth Hodgson, who had maintained an immediate perception of spatial extension in his *Time and Space* (1865), and who recognized in the present series of papers the extension of his own “conception of space as an inseparable but distinguishable element of certain classes of sensation.”<sup>29</sup> There is a spatial *quale*,<sup>30</sup> and for James, it cannot be the output of any synthesis, even if we try to introduce “motor” and other “muscular” sensations. To perceive a space is to perceive relations that are not added or inferred by the mind,<sup>31</sup> and the whole series of papers defends this position against both sensualists and intellectualists. Those of the sensualist persuasion arrange sensations “like dominoes,”<sup>32</sup> while the intellectualists transpose everything into the level of merely conceived relations, and do not see that these relations occur at the level of sensations themselves.<sup>33</sup> When James insists upon the primacy of sensation, this notion must thus be understood with the very meaning it has in the *Principles*, and which is irreducible to psychological atomism.<sup>34</sup>

James’s solution, the assumption that this “quale” is a “first” psychical thing is exactly what Peirce cannot “bring himself” to see. One can easily see why Peirce would be reluctant to accept this since the basic thrust of his early texts — the 1868 series — was that such a move would allow for the reinstatement of “intuitions”, or at least of premises which would not be the *conclusions* of inferences. This was notoriously proved to be impossible by the seven “Questions”. Regarding space-perception, Peirce held that while before Berkeley “it had generally been believed that the third dimension of space was immediately intuited”, at present, “nearly all admit that it is known by inference” (5.219, 1868),<sup>35</sup> and he did not seem to change his mind on that issue in the 1870s, for, in “The Order of Nature,” he made nearly the same point (6.416).<sup>36</sup> It is also important to note that the quarrel over a “first” psychical thing proved to be one of the most enduring bones of contention between Peirce and James.<sup>37</sup> The two men had endless discussions over the years about the “semiotic triangle”, that is, the image introduced, in the last lines of “Questions Concerning Certain Faculties,” showing that there was no “first psychical thing.”<sup>38</sup> In the same way as there is no *first* line of immersion, when the triangle is dipped into the water, Peirce argued that there was no “first” (5.263). For the same reason, that is to say, on account of logic, Peirce held now that “nothing assignable is a first sensation”. This letter from Peirce to James refers to the same general discussion and to the same argument that James had so much trouble admitting. James’s refusal to accept this argument held out against great efforts by Peirce, judging



from Peirce's late recollections, in 1911, as well as from remarks scattered in the manuscripts.<sup>39</sup>

This partly explains Peirce's reaction, insofar as he shared, at least at some point, something with the "usual" philosophy. But is it possible to go one step further, and to claim that Peirce was in fact one of the targets of James's 1887 papers? It would of course be sweeping to argue that he was writing against Peirce here, as there are many other obvious opponents and allies for James. However, it is also very likely that James had associated Peirce, at least for some period of time, with the champions of the "usual philosophy". Some clear elements of evidence for this can be found in James's lectures on Physiological Psychology (Harvard, 1876-1877), written before the "Spatial Quale", when he was under a strong Peircian influence.<sup>40</sup> In these lectures, he pointed to the variability of sensations, which is not an obstacle to our objective knowledge, and to their being relatively overlooked in favor of "things". James notes, summing up the "usual" philosophy of perception, that "it is, regarded as a mere phenomenal description, so patent, and so influential practically that it has received almost exclusive attention from one type of philosophic minds which we may call the logical idealists and of whom Hegel, Green and C. S. Peirce may be taken as types" (W:ML, 128). This was clearly broaching a connection between Peirce's views and Helmholtz's:

Such minds point to the fact that as a rule our sensations are merely contributory to our *opinions* about *things*. The *things* are the matter of knowledge, the sensations are overlooked. [...] Helmholtz's *Optics* is one long commentary on this law. He shows the sensations of the retina to be to the last degree fluctuating and inconsistent; and yet, the eye, *as its data enters the system of thought*, and are there used, is an instrument of admirable precision and giving most exact and constant results. One may go further and affirm that it makes no difference at all *what* the sensation is in itself, its function in thought, its connections with the other ingredients of the mental organism so *determine* it, that if time enough is given it will in all cases contribute to one identical conclusion. (James, *ibid.*)

There is thus no doubt that Peirce was seen as representative of the very position that James tried later to fight in the "Spatial Quale" and in the *Principles*, for a few lines later in this 1876 Lecture, James elaborates, to illustrate Helmholtz's views, on "Peirce's example of [a] blind and [a] deaf man witnessing a murder". This recollection is a verbatim quotation from Peirce's 1871 review of Berkeley's *Works*.<sup>41</sup> The point was that the two men shared a common knowledge, and were

able to provide objective observation reports, starting from quite different sensational cues. Peirce's example is used, James claims, to show that

...there is an inevitable drift in thought, a logical destiny precipitated out of all experience, which takes up every sensation and makes it contributory to its end, if it can correct it, reduce it, or interpret it; & if not, extrudes it as error, (and even then uses it, for counted *as error*, errors are fact and part of the body of ascertained truth.) This conclusion to which all sensations, all men, all opinions converge is inevitable, if time and experience are given, and is "the Truth". (James, *ibid.*)

James does not commit himself on this thesis here, but this extract, in which what Hilary Putnam has dubbed the "Peircian strain"<sup>42</sup> is the most obvious, proves that in 1876 at least, Peirce was seen as an inferentialist on the issue of perception. It is another matter to evaluate whether Peirce's views in 1887 could still be seen as inferentialist, and this would lead us beyond the scope of this paper. But certainly Peirce's vindication of the "Outward Clash", in "An American Plato" (1885), pointed to a different direction, towards a better understanding of non-descriptive reference.<sup>44</sup> Nevertheless, the above passage suffices to show that, from James's standpoint, Peirce was bound up with the positions James wanted to criticize in his papers on Space.

#### *The "Synthesis of Fragmentary Spaces"*

We have now, I hope, gained a better insight on what Peirce was — and was not — ready to admit in James's papers, and while Peirce's doubts were not surprising, his enthusiasm for James's account of the continuity of space was perhaps less expected:

This synthesis of fragmentary spaces seems to me perhaps the best thing in your work. Is not objective space built up in much the same way? Can we not suppose that the unity & uniformity of space has been developed out of coalescing Fragments, both adjacent & superposed?<sup>45</sup>

It should thus not be assumed that the present discussion is confined to a sharp opposition between two popular theories of perception. Peirce went here one step further, exploring the geometrical corollary of James's psychological description. When Peirce read James's papers, he had already framed the idea that his own categories, as sketched in "One, Two, Three: Kantian Categories" (1886), could in some way cast light on the evolution of physical



space and on the evolution of "certain general laws of position" (W5:293). Having dismissed the notion of space as "an individual receptacle of things", and reflecting on non-Euclidian geometries, he suggested that the actual structure of space was the result of a process involving chance, law and habit: "the principles of logic require us to think that space did not always have its present simple construction, but that this has been brought about by some gradual process" (W5:292-93). The same line of thinking is taken up in the present letter. Yet if Peirce was concerned with objective, or physical space, why would he think that James had provided an interesting treatment of fragmentary spaces? It should be recalled that Peirce, having proposed his categories, proceeded "to put the conclusion to a test by an independent examination of the facts of psychology."<sup>46</sup> Here, James's psychological description of phenomenal space seemed to confirm these views, and this "independent examination" can be read as a "test" for Peirce's "Guess...". Peirce's reasons for admiring this aspect of James's works are no doubt due to the fact that telling from whence order and continuity come is very close to answering a metaphysical "Riddle...". Peirce's concern, in the letter, is thus quite clear: he tries to provide, with the help of the categories, an "objective" reading of what would remain only "subjective" and psychological in James's paper. The synthesis of "fragmentary spaces" is in fact the subject-matter of the whole series of papers on Space, but it is developed in minute detail in *Section 3* of the second paper, "The Synthesis of the Original Sensible Bigness."<sup>47</sup> If, as James claims, Space is not a transcendental structure of experience, and if all our sensations are spatial, it remains to be shown exactly *how* space is made from these fragmentary sensational spaces, and how "the various sense-spaces are added together into a consolidated and unitary continuum."<sup>48</sup> This is James's "metaphysical" question, and even though the particulars of his development are fascinating, I can just sketch here the point where an obvious similarity with Peirce's "Guess..." stands out.

If we pay attention to the different "layers" of James's sensational space, we find *first* a chaos of sense-impressions, where objects of the different world-spaces do not appear even located: they are neither inside, outside, or alongside, and it is not possible to speak of continuity or discontinuity here (*Mind*, 1887, 10-11). There are first spaces, but no Space is there to articulate their sundry dimensions: feelings are "roomy", well before being *in a* space. *Secondly*, there are particular identifications of *pairs* of spaces (the "ache"-space with the "toe"-space; the tooth-cavity with the finger).<sup>49</sup> Space develops from the chaotic sensations themselves, and the modes of these identifications are sundry, depending on the sensational texture of each world-space: by subdivision for the eye, by addition for touch. Some spaces are simply covariant with other spaces: the baby has to learn to locate the space of his ache ("the ache is a space, and it will be located within whatever movement-spaces may call it forth, or whatever pressure-space, heat-space or what not, may envelop it"<sup>50</sup>). *Thirdly*, there is a law of habit, where one of the spaces becomes the sign and "suggester" of other sensational spaces:

In degrading some sensations to the rank of signs and exalting others to that of realities signified, we smooth out the wrinkles of our first chaotic impressions and make a continuous order of what was a rather incoherent multiplicity. (*Mind*, 1887, 208)<sup>51</sup>

This “law” is effective on two levels: (1) into each sensational dimension (or “world-space”), when one “aspect” becomes more salient than the others and (2) at another level, between the different spaces, whether they are visual, tactile or proprioceptive (*Mind*, 1887, p. 183), when one of these “world-spaces” becomes a sign and suggester of the others. James does not return to a Kantian space, but points rather to the pragmatic background of space: “when two sensorial sense-impressions, believed to come from the same object, differ, then *the one most interesting, practically or aesthetically, is judged to be the true one*” (*Mind*, 1887, 193). No Space precedes the many spaces, but each of these spaces, with its own texture, can be used to map the others. Much has been said about James’s developments on “joint-feelings”, in particular because these passages have been criticized by Wittgenstein,<sup>52</sup> but in his examination of these alleged feelings, James’s point is not so much to separate a privileged kind of sensational extension from the others than to show that the choice of the “map”, on which spatial sensations are projected, is in itself contingent:

In fact, the joint-feeling can frequently serve as a map on a reduced scale, of a reality which the imagination can identify at its pleasure with this or that sensible extension simultaneously known in some other way.<sup>53</sup>

If we sum up James’s approach, we see that, in addition to his metaphysical question, there are three distinct stages: (1) chaotic sense-spaces, (2) pairs of spaces, and (3) habits of suggestion, which James takes to be a sign-relation. This echoes Peirce’s three categories and his attempt to show that “three elements are active in the world, first, chance; second, law; and third, habit-taking” (W6:208). But there is another obvious link. “The Guess at the Riddle” was written at the end of 1887,<sup>54</sup> that is to say roughly when Peirce wrote his comments on James’s papers, and there is a genesis of objective space similar to that sketched here in the letter (Cf. W6:210). Peirce, whose question is explicitly metaphysical — it is what the “Guess...” is all about — sketches the development of physical space, from pure indeterminacy, through quasi-flow, to the coalescence of fragmentary spaces (W6:209).<sup>55</sup> After the pure Firstness of the flashes “out of the womb of indeterminacy” (W6:209), relations of pure Secondness provide the germ of spatial extension:

But Secondness is of two types. Consequently, besides

flashes genuinely second to others, so as to come after them, there will be pairs of flashes, or, since time is now supposed to be developed, we had better say pairs of states, which are reciprocally second, each member of the pairs of the other. This is the first germ of spatial extension.

This is the “first germ”, after the continuum. But this space would be a space of pure secondnesses, like James’s space after the first identifications. This nascent space looks much like James’s inchoate articulation of the sundry world-spaces:

At the outset, the connections of space were probably different for one substance and part of a substance from what they were for another; that is to say, points adjacent or near one another for the motions of one body would not be so for another. (W6:210)

And here also it is important to make a distinction between these pairs of states and the space continuum, where habit-taking tendencies are prominent:

These states will undergo changes; and habits will be formed of passing to certain states to certain others. Those states to which a state will immediately pass, will be adjacent to it; and thus habits will be formed which will constitute a spatial continuum, but differing from our space by being irregular in its connections, having, too, one number of dimensions in one place and another number in another place, and being different for one moving state from what it is for another. (W6:209-210)

However, in James’s space, a painter, a “*Ruskin*”, or a cunning experimentation, could reactivate for a moment the “innocence of the eye” (PP2: 179), and manage to break the habitual connections of our pragmatic “maps”, while in Peirce’s objective space, the irregular connections tend to disappear irreversibly:

The substances, carrying their habits with them in their motions through space, will tend to render the different parts of space alike. Thus, the dimensionality of space will tend gradually to uniformity; and multiple connections, except at infinity, where substances never

go, will be obliterated. (W6:210)

When Peirce proposes, in his letter, to assume that “the unity & uniformity of space has been developed out of coalescing Fragments, both adjacent & superposed”, he does more than comment on James’s paper, he transposes its most interesting results in terms of the categories. Still, a huge difference remains: the description does not rely on the psychological dimension of extension, but on the interplay of the categories. If we sum up the characters of Peirce’s assessment of James’s views on space<sup>56</sup> before the *Principles*, two striking characters stand out: first, Peirce’s opposition to sensationalism, for reasons of logic; second, his attempt to provide a metaphysical reading of James’s description, with the idea that, far from psychology providing a framework for logic and metaphysics, psychology (1) calls for a metaphysics, and (2) that it cannot overlook the requisites of logic. This will be one of the leading themes of Peirce’s review of the *Principles*.

## II. Perception and Unconscious Inference

Peirce’s devastating review of the *Principles* for the *Nation* appeared unsigned but not unnoticed,<sup>57</sup> and even if the overtone was clearly Peircian, there is no evidence that James ever knew that Peirce was its author.<sup>58</sup> James deemed it “utterly unintelligible” and did not take pains to write any reply to the criticisms. Still, they do not seem so obscure or irrelevant and they address the important issue of the relationship between perception — ‘suggestion’ in general — and logic.

As I mentioned in the first section, James struggled in the whole book with inferentialist approaches of perception and, in addition to the positive treatment of space-perception in Chapter XX, he devoted a section of Chapter 19, “The Perception of ‘Things’”, to the question “Is Perception Unconscious Inference?”<sup>59</sup> In this short text, he faced three versions of the doctrine that “*perception should be called a sort of reasoning operation, more or less unconsciously and automatically performed*”, and, accordingly, he canvassed three types of criticisms, that Peirce subjected to close reading. One should not be surprised at Peirce’s interest in this very topic of unconscious inference, as his own approach to habit, suggestion, association, had made him sensitive to the question of defining the logical operations escaping our criticism. In “A Theory of Probable Inference” (1883), Peirce had claimed that “a syllogism in Barbara virtually takes place when we irritate the foot of a decapitated frog” (W4:422). He had also been concerned with the question of deciding whether these operations might be said to be inferences. In “Methods of Reasoning” (1881), he objected to this term (“our action cannot be said to be an inference, but it conforms to the formula of Barbara”, W4:252), and more recently, in his “Qualitative Logic” (1886), considering the principles of association, and in general all sorts of unconscious reasoning, he had urged the idea that “these unconscious and

uncontrolled reasonings hardly merit that name" (W5:327). Still, they had to be investigated: "all such inferences are, of course, beyond the jurisdiction of criticism. It is the part of psychology to explain their processes as it can, but as long as they are out of consciousness, they are out of our control and it is idle to call them good or bad" (*ibid.*) In addition to the assessment of James's views, Peirce's review of the *Principles* provided him with the opportunity to make his own views on this issue clearer. It will be worth stating James's three versions before turning to Peirce's objections.

In the first version, the proponents of the doctrine would take "inference" in a generalized sense, as "suggestion", and assume that perception is part of the general phenomenon of suggestion from unconscious premises. Perceptions would thus be suggested from unconscious cues. James dismisses this approach at once, stating that in perception everything, both the "present sign" and the things suggested, are "above-board", so much so that no room is left for any unconscious first premise. This first criticism is very close in its spirit to direct-realist contemporary arguments.<sup>60</sup> In the second version, perception would involve a *tacit* inference running like this: "'This' is M; but M is A; Therefore 'this' is A". But, according to James, this begs the question for it obviously generates an infinite regress: in this syllogism, the premise is already a perception, so much so that it involves a previous unexplained inference. In the third version, to avoid the regress, the inferentialists would put the inference as: "'This' is like *those*; *Those* are A; Therefore 'this' is A", where no naming of "those" as M occur in the major premise. In that case, according to James, enrolling "inferences" would be a superfluous move since everything can already be explained by physiological habits, and it is better to assume that the perception of A is a direct physiological result of the "This"-experience, the comparison with other occurrences (the "those") being no doubt possible in *explicit* reasoning but *dispensable* here. There is much to be said about this last version, but James assumed here that it was safer to state that "both [perception] and reasoning are coordinate varieties of that deeper sort of process known psychologically as the association of ideas, and physiologically as the law of habit in the brain" (PP 2: 113). If we sum up, we can say that these three versions correspond to three objections: the *unconscious premise* argument; the *regress* argument, and finally the *association* argument.

Peirce dismisses these three objections, coupling each of his objections with a positive solution. The first specific objection is aimed at James's understanding of the inference-theory: Peirce questions whether any German psycho-physiologist has ever claimed that unconscious inferences in perception were inferences whose *premises* were unconscious. Such philosophers would mean, as Peirce puts it, "some ultra-Leibnizian unconscious perception." James would thus be criticizing straw men. Moreover, he would be mistaken on the notion of "unconscious inference" itself, for unconscious inferences, in the literature, whether they are perceptions or ordinary suggestions, would not imply

unconscious major premises, but would mean instead “inference[s] in which the reasoner is not conscious of making an inference.”<sup>61</sup> When they refer to unconscious inferences, psycho-physiologists do not point to the nature of the first premise but to the subjection to logical self-control. Most interestingly, Peirce develops here in a nutshell the distinction between controlled and non-controlled operations of the mind. As non-controlled operations, perceptions are not, properly so called, inferences,<sup>62</sup> but Peirce suggests here that, in two important ways, they are closer to inferences in the strict sense than ordinary suggestions. Our perceptual judgments (1) subsume something under a class (“perception attains a virtual judgment, it subsumes something under a class,” CN1:108) and (2) they “attach to the proposition the seal of assent” (*ibid.*). They have thus a hybrid character and, as such, they share some aspects with our logical inferences, but two major features are missing: one “does not make that sidethought which enters into all inference strictly so called: ‘and so it would be in every analogous case (or in most cases)’” (*ibid.*), and there is no reflective acceptance of the proposition (one “is not conscious that [one’s] acceptance of the conclusion is inferential”). The same difficulty was urged again in Baldwin’s *Dictionary*, under the entry for “Inference”, and in the *Harvard Lectures*, where Peirce claimed that “perceptual judgments [were] to be regarded as an extreme case of abductive inferences” (EP2:227). The first objection is thus, for Peirce, unfounded, and obscures important elements involved in perception.

As regards the second version, Peirce has two levels of criticisms. The first is formal: infinite regress is not always a problem, for the mathematician at least, and the regress in question occurs only if the major premise of the inference belongs to the class of inferences with unconscious premises. But there are authors who think that there are first premises, in the guise of “sensations”, and in that case at least, there is a regress, but not an infinite one. Peirce does not embark here on defending these possibilities for the point is just to show that James has overlooked important variants of the doctrine. The other level of criticism is a suggestion: if there is something like an inference in perception, it is more akin to hypothetic inference than to the two other modes. “A well-recognized kind of object, M, has for its ordinary predicates P[1], P[2], P[3], etc., indistinctly recognized. The suggesting object, S, has these same predicates, P[1], P[2], P[3], etc. Hence, S is of the kind M.” This pattern blocks the *fallacious* aspect of the regress, for it is not impossible that P[1], [P2], and so on, are the result of former hypothetic inferences, and that we never reach simple predicates. It is not possible to comment here on the details of this suggestion, recently revived by R.L. Gregory, but its minute development can be found in “Some Consequences of Four Incapacities”, where Peirce describes a sensation as “a simple predicate taken in place of a complex predicate; in other words, it fulfills the function of an hypothesis” (5.291, 1868). Hypotheses can be made about hypotheses, and can simplify them to some extent, even if we never grasp a first predicate that would not be an hypothesis.



Peirce does not comment on the third version in detail, but addresses now James's strategy on the problem of 'suggestion': Peirce now raises the general problem of how we have to understand the association of ideas. James's strategy was to show that the principles of association were more than enough to explain the process of perception, without involving logical forms. But this is going against a very early Peircian claim: association is not an explanation but has to be explained *itself*. Far from providing a ground for logic, association is regulated by the principles of inference.<sup>63</sup> The 1868 "Questions..." were very explicit on this: the principles of association are in their essence sign-relations, and their "determinations" are inferential:

The association of ideas is said to proceed according to three principles — those of resemblance, of contiguity, and of causality. But it would be equally true to say that signs denote what they do on the three principles of resemblance, contiguity, and causality. There can be no question that anything is a sign of whatever is associated with it by resemblance, by contiguity, or by causality: nor can there be any doubt that any sign recalls the thing signified. So, then, the association of ideas consists in this, that a judgment occasions another judgment, of which it is the sign. *Now this is nothing less nor more than inference.* (W2:237; emphasis mine)

Peirce does not waver on the idea that logic provides a proper organon to investigate these principles of association. When James argues that the process of perception is not different from the psychological process of association nor from the physiological process of habit, he remains at the edge of the real problem and begs the question. The problem remains unanswered at a higher level: are our *associations* unconscious inferences? If they are, then our perceptions too *are* unconscious inferences. Are the laws of nature logical in their essence? If they are, the physiological law of habit follows unconsciously the rules of inference. Peirce has paid considerable attention in the 1880s and 1890s to these questions: the former will find an answer in the context of the separation between the controlled and non-controlled operations of the mind, the latter in Peirce's cosmology. Meanwhile, considerations on association are an important part of the manuscripts for the *Grand Logic*. Peirce discusses James's views on association in several places during this period.<sup>64</sup> While perception and association are two important themes in both volumes of the *Principles*, Peirce's diagnosis is not limited to these occasions: he subjected some decisive chapters of the first volume to close-reading.

### III. Consciousness, Categories and the "Stream of Thought"

Peirce raises, in a manuscript called "Questions on James's Principles of Psychology" (R1099),<sup>65</sup> some very interesting objections to the first volume of the *Principles*. The series of questions covers the first nine chapters, with a particular emphasis on two of them: half of the questions are directed to Chapter VIII, "The Relations of Minds to Other Things" ("Questions, 21-30") and Chapter IX, "The Stream of Thought" ("Questions, 31-44").<sup>66</sup> My purpose in this section is to show that Peirce's remarks are closely linked with several of his works in progress on consciousness, on the categories and on abstraction. Since it is not possible here to deal with all the 'Questions', I shall confine myself to the questions related to consciousness and to the 'Stream of Thought'.<sup>67</sup> My guess is that when Peirce wrote his *staccato* remarks on Chapters VIII and IX, he was confirmed in the idea that, with the help of the categories and of his logic, he could avoid most of the confusions which flawed James's psychology. "All this business will appear dark and mysterious until the three categories are mastered and applied,"<sup>68</sup> Peirce remarks, and we shall see how this elucidation takes place, for the elements of consciousness, as approached by the categories, and for the stream of consciousness, as approached from the standpoint of logic. Before doing so, I shall just broach Peirce's remarks on "Habit", in order to provide a sample of Peirce's general method of handling the *Principles*.

Most of the chapters of the *Principles* have been read for a long time as an attempt to naturalize some of the old notions of classical moral philosophy,<sup>69</sup> but there are indeed different ways to situate mind's place in nature. We know that, from "Design and Chance" on, Peirce was developing the cosmological counterparts of his own theory of habit and, here again, James's own definition could not but strike Peirce's attention, for James makes it clear, at the outset, that habits cannot be confined to the nervous system, and that "the philosophy of habit is (...) in the first instance, a chapter in physics rather than in physiology or psychology."<sup>70</sup> Accordingly, he sought support from Mechanical science to investigate what in the "brain-matter" would allow for the formation of habits and concluded that "*the phenomena of habit are due to the plasticity of the organic materials of which their bodies are composed.*"<sup>71</sup> So far, Peirce could subscribe to his approach,<sup>72</sup> and he certainly shared James's view that the brain is "an organ in which currents pouring in from the sense-organs make with extreme facility paths which do not easily disappear" (PP1:107). This is the classical image of the "river bed" or of the "folded garment", but James went further, assuming: "So nothing is easier than to imagine how, when a current once has traversed a path, it should traverse it more readily still a second time" (PP1:109). This is where Peirce and James depart. Habits, and in general irreversible processes that are characteristic of the law of mind, seem to violate the law of conservation of energy, so much so that a new approach is necessary.<sup>73</sup> Peirce developed such a view in "Guess at the Riddle",<sup>74</sup> in a context where the formation of habit was opposed to mere "mechanical law". As he will make clear in the 1898 *Cambridge Lectures*,

“conservative forces (...) govern nothing but the space relations particles”(RLT:212) and they are reversible, while non-conservative actions “are all distinguished by asymptotic approach to a definite state of relative rest”, a character conservative forces can never bring about, except for an instant. Moreover, the mechanical explanation could not account for the “final” aspect present in every habit, which distinguishes mental from mechanical action.<sup>76</sup> Habit is thus unexplainable from merely mechanical principles, and cannot be accounted for by pure chance only, so much so that a richer approach to physics had to be sketched. In “Question 9”, the objection is still in the interrogative mood,<sup>77</sup> but Peirce notoriously devoted much time in the following years to develop such a cosmology: “it is clear that nothing but a principle of habit, itself due to the growth by habit of an infinitesimal chance tendency toward habit-taking, is the only bridge that can span the chasm between the chance-medley of chaos and the cosmos of order and law” (6.263). The psychology of habit calls itself for a larger metaphysical picture, and if habit becomes naturalized, the concept of nature itself does not remain unchanged.<sup>78</sup> We have here, in a nutshell, the general pattern for Peirce’s remarks on James’s *Principles*: acknowledging some insights in James’s work, and providing at the same time the relevant conceptual tools to grasp the phenomenon considered. The same attitude can be seen at work in Peirce’s questions (a) about consciousness and (b) the stream of thought.

#### a) Categories and Consciousness

It is often believed that the dispute between Peirce and James about consciousness takes place within the context of radical empiricism. There is a very famous exchange of letters in 1904 about “Does Consciousness Exist?” to that effect,<sup>79</sup> but “Questions 22 to 33” suggest that this discussion had already been sketched in the 1890s, in Peirce’s present commentary on the *Principles*. The fact is that when he read the *Principles*, Peirce had already framed the idea that the three categories had a role to play in the approach of consciousness. He had already found that they could change the way we were to study psychology,<sup>80</sup> but his examples in the “Guess...” were mostly borrowed from Kant and Tetens. As James develops, in the course of the *Principles*, a slightly different taxonomy of consciousness, this is a new and interesting field of investigation for Peirce:

The mental states, James wrote, usually distinguished as feelings are the *emotions*, and the *sensations* we get from skin, muscle, viscus, eye, ear, nose, and palate. The ‘thoughts,’ as recognized in popular parlance, are the *conceptions* and *judgments*. (PP1:222)

James is relying here on the ordinary use of language, to make a loose distinction between emotions and sensations, conceptions and judgments. Peirce,

who had also proposed a taxonomy in his “Guess at the Riddle”, where, as has been mentioned, he tried “to put the conclusion to a test by an independent examination of the facts of psychology”,<sup>81</sup> wondered, when he read James’s taxonomy, if “this classification of ‘mental states’ as feelings and thoughts [was] sufficiently scientific.”<sup>82</sup> This was of course a rhetorical question. First, it seemed difficult to compare ‘mental states’, which are ‘total states’ and include as such many coalescing ingredients. Second, Peirce had another division in mind: “Is it not better to adopt the logical division not of “mental states” but of mental *elements*, into feeling-qualities, reactions (volition and experience), and habit-taking?”<sup>83</sup> The so-called “states” are modes of consciousness, while *elements* can be investigated and studied for themselves.<sup>84</sup> It can be argued that “Questions 22 to 33” are as many steps in this process of elucidation. I propose thus to read them as “exercises” for the use of categories in the field of consciousness.

Peirce’s taxonomy allowed him to detect category-mistakes in James’s own treatment of the problem. The pseudo-problem of the likeness between feelings could be dismissed (see “Question 33”<sup>85</sup>). By the same token, confusions between feelings and dual “elements” of consciousness can be avoided. For example, in the “Automaton Theory” Chapter, James casts doubt on the idea that “the nervous system *per se* might work the work for intelligence” (PP1:130), that is to say that consciousness might have no real efficacy. This kind of discussion is quite familiar today, under the guise of “ghosts in the machine” and other “zombies”. It raises important grammatical questions, but this is not James’s strategy here. He looks for counterexamples to this form of eliminativism, focusing on the notions of “interest” (PP1:139), of alleged “*should be’s*” and of “pleasures and pains”. The latter are conscious *and* seem endowed with efficacy (PP1:143-44), so the automaton-theory seems to face absurd consequences:

If pleasures and pains have no efficacy, one does not see (without some such *a priori* rational harmony as would be scouted by the ‘scientific’ champions of the automaton-theory) why the most noxious acts, such as burning, might not give thrills of delight, and the most necessary ones, such as breathing, cause agony. (PP1:144)

James’s argument can be endorsed if and only if these pleasures and pains count as *feelings* and can be detached from what is noxious or useful in these acts, for the automaton-theorists have no problem acknowledging that an organism can, for evolution-dependent reasons, look blindly for what is advantageous to its survival. James’s argument is thus void if these two classes, feelings and pains, belong to different kinds, as Peirce tries to show:

Why would it not be equally logical to say, "if pleasures and pains have no efficacy, one does not see why men should not shun the pleasurable as much as the painful." But the obvious answer would be, *because, as this fact shows, pleasure and pain are more than pure monadic feelings*. Is not this the answer to the question that is put? ("Question 14")

This is obviously part of the answer: feelings have no efficacy by themselves and pains and pleasures belong more to the Second category than to the First. In that, James shares a prejudice with the hedonists who "make mere feelings to be active agencies, instead of being merely conscious indications of real determinations of our subconscious volitional beings" (1.333, 1894).<sup>86</sup>

In his "refutation" of the automaton-theory, James mistook what were in fact Seconds for Firsts — Feelings — and the symmetric confusion occurs in his famous notion of "knowledge by acquaintance", as opposed to "knowledge-about". James then opposes "feelings", our *acquaintance* with objects, and "thought", our knowledge *about* these things: "Through feelings we become acquainted with things, but only by our thoughts do we know about them. Feelings are the germ and cognition, thoughts the developed tree" (PP1:222). Here again, this is endowing feelings with a function they do not have, as Peirce argues:

"Through feelings we become acquainted with things." This seems to me to be at the root of a good deal of bad metaphysics. On the contrary, the feelings are matters of indifference (in their qualities). It is by the reactions of ourselves upon things and of their parts on one another that we become acquainted with things, as it seems to me. ("Question 29")<sup>87</sup>

When James says that we are acquainted "through" feelings, he gives them, in real fact, properties of Seconds. Acquaintance might be a relevant notion, as far as cognition is concerned, but it is more a dynamical relation to sets of things than mere indifferent feeling. The sharp opposition between knowledge by acquaintance and knowledge-about is thus, from Peirce's standpoint, not an opposition between "feeling" and "thought", but between brute reactions and Thirds, that is to say between Existents and Reals.

In some other texts, James's nominalism appears more clearly, in his typical blurring of the distinction between Seconds and Thirds. His analysis of the role of the psychologist betrays just this confusion: he claims that no explanation of the mystery of knowledge is necessary since the psychologist, as he is "outside" the thinker's finite mind, can himself "go bail" for the independent reality of the

objects of our beliefs (PP1:217). From Peirce's standpoint, this move threatens the very idea of inquiry:

It is well enough for his sake to notice the matter, but the gulf between the two things, of *how we know we have any knowledge* (the answer to which is that our conception of independent existence is merely the conception of resistance to our will, which we directly experience) and how we know that a particular belief, or dictum, of ourselves, of another, or found recorded on tablet by we know not whom, is any measure determined by the fact itself or is mere whimsey (which we test not so much by setting up our own opinion as a standard as we do just as we continually test our own impressions, asking ourselves, "Now am I just and unbiassed?" etc). ("Question 26")

Here, the confusion between Firsts and Seconds — between monadic feelings and dyadic reactions — obscures the important distinction between Seconds and Thirds. The categories are of a great help to understand that James's account of the fallacy involves the nominalist confusion between existence and reality, between brute reaction as a matter of secondness, and reality as the outcome of a process of inquiry. Peirce's strategy is the same in all these examples: he shows that a category is missing in James's account, and that this category is just necessary to solve the problem considered.

Another gross confusion concerns thought and feeling and deserves mention for it is central to the pluralist pathos pervading the *Principles*. Peirce derides here James's avowed individualist pluralism: the latter asserted that the breaches between minds were the "most absolute" in the world, with the result that "no thought even comes into direct sight of a thought in another personal consciousness than its own. Absolute insulation, irreducible pluralism, is the law" (PP1:226). This pluralism is the corollary of a mentalist approach of thought and it betrays a staunch psychologism. One type of answer would insist on the nonsense of these private arguments, but Peirce wants here to show that the categories can make this matter less mysterious:

Is not the direct contrary nearer observed facts? Is not this pure metaphysical speculation? You think there must be such isolation, because you confound thoughts with feeling-qualities; but all observation is against you. There are some small particulars that a man can keep to himself. He exaggerates them and his personality sadly. ("Question 31", re PP1: 226)



To suppose that “thoughts” are isolated is to confuse them with feelings, while thought is public. Peirce’s satire of this argument with the famous ‘tale’ about the tongue’s privacy is so famous that to comment upon it would be mere impertinence.

A last interesting and symmetrical kind of confusion consists in supposing a sharp opposition between two phenomena while they are in fact two aspects of the same category. The clearest example is that of Experience and Volition. James had considered the problem of the existence of a soul and had concluded that this hypothesis, if dubious, was “less positively objectionable” than other hypotheses (PP1:182; See “Question 18”). This discussion resumes in Chapter VIII when — oddly enough — James insists that the soul has two kinds of relations to other ‘objects’: direct as far as *cognition* is concerned, indirect as regards *action*. This was both too intellectualist and too voluntarist: too intellectualist, for it implied a mysterious relation between the soul and the brain, too voluntarist, for it implied a mysterious action (of the soul through the brain) before each actual action. Peirce offers a *reductio* of this argument in order to show its inadequacy:

So here: in what way can it be maintained we are in experiential relations to objects outside the skull but in no volitional relations to them? You say it only acts upon outward things through the intermediary of the body : does it then know outward things otherwise than through the intermediary of the body? Perhaps if telepathy is true. But if telepathy is true cannot the soul act otherwise than through such intermediary. In short, is there not a clinging parallelism between the two cases? (“Question 24”, PP1:216)<sup>88</sup>

Peirce’s point was to show that, from the standpoint of the categories, experience and volition were symmetrical, and were two aspects of the same dynamical reaction. James was thus hypostazing this simple difference of aspects and opposing two faces of the same reality. There is no difference of nature between willing and experiencing. A close examination of “The relations of minds to other things” had thus much to learn from a proper approach to the different forms of relation: the categories, here, could be of a great use to prevent some of the most frequent fallacies in the philosophy of mind.

#### *b) Substantive and Transitive Parts*

The last four questions concern one of the most famous features of James’s notion of the “Stream of Thought”, the distinction between *substantive* and *transitive* parts,<sup>89</sup> the “flights and perchings” of thought, whose resting-places are “occupied by sensorial imaginations of some sort”. James had paid much

attention to the *transitions* between thoughts within the apparent continuity of the stream of consciousness, and had claimed that these transitions were integral parts of the stream: "the transition between the thought of one object and the thought of another is no more a break in the *thought* than a joint in a bamboo is a break in the wood. It is a part of the *consciousness* as much as the joint is a part of the *bamboo*" (PP1:240). James, a few pages later, turned these 'transitions' — an uncontroversial term — into the 'transitive parts' of the stream of thought:

Let us call the resting-places the 'substantive parts', and the places of flight the 'transitive parts', of the stream of thought. It then appears that the main end of our thinking is at all times the attainment of some other substantive part than the one from which we have just been dislodged. And we may say that the main use of the transitive parts is to lead us from one substantive conclusion to another. (PP1:243)

Many interpretations of these lines have been proposed, both inside and outside the pragmatist tradition. Within the pragmatist tradition, these lines could be read as announcing one of the main tenets of James's later radical empiricism, whose motto was that "the relations that connect experiences must themselves be experienced relations."<sup>90</sup> Out of this tradition, they have met a considerable attention in phenomenology,<sup>91</sup> where this distinction was held to be a description of the "primal flux and of intentional acts". Several interpretations were possible for the extract just given can be read along different lines. In the first kind of interpretations, the stress would be laid on the opposition between "things" and "relations", the "relations" escaping our attention for the sake of "things" (the "substantive" parts). The argument would be, in this first case, that we have a tendency to overlook the reality of relations, because they are less accessible to introspection than substances, and James would clearly anticipate here one of the main theses of radical empiricism. In the second reading, the stress is laid on the opposition between *explicit* and *implicit* relations, between the result of a move in the stream of thought and the move itself, the most difficult task being to move the "winged" relations into a field where they can wear a substantive form. In this latter understanding of James's position, which will be endorsed by Peirce, the substantive parts and the transitive parts *are* relations anyway, but only the first can fall easily under our scrutiny and control. It is thus extremely interesting to see that Peirce saw this ambiguity, when he first read the *Principles*, and proposed his own reading. He expressed his interest in this distinction several times. The first occasion is "Question 41", where he holds that this conceptual distinction is "one of the finest, if not the finest, passage in the whole book", but immediately complains that James's choice of these terms was against all good ethics of terminology.<sup>92</sup> I shall first deal with this latter

problem, for it raises interesting questions concerning the reality of relations, and then consider why, according to Peirce, this was “one of the finest points” of the book.

*Transitive, Relational, “Pterocent”*

Peirce’s “Question 41” — where he assumed that “transitory” was a better term than “transitive” — paved the way for an interesting exchange on terminology. At first glance, this discussion about terminology might seem purely verbal, but it soon appears that it relies on just the ambiguity we have described. It started with a letter to James, dated January 1, 1894, where Peirce tried to draw James’s attention to this point, acknowledging the importance of this process in logic, where one of the most difficult operations is “to catch the transitive on the wing and nail it down in substantive form,”<sup>93</sup> but warning James that “the word ‘transitive’ ha[d] been used for other purposes”, in the logic of relatives by De Morgan and himself, and in the theory of substitutions.<sup>94</sup> For a mathematician, James’s choice is unfortunate, since there is already a technical meaning for this term: “by a transitive relation is meant one such that if A is in that relation to B and B is in the same relation to C, then A is in that relation to C” (W5:335). This was far from what James was trying to express in this instance, and Peirce thus went on to suggest other, more suitable, terms, such as “transient”, “adjective/substantive”, or the more surprising pairs “volatile/sessile”, “winged/unwinged” and “planetic/aplanetic”. None of these terms were already committed to technical use in logic, so they could easily convey James’s views. Unsurprisingly, James did not assent to Peirce’s suggestions, and instead proposed to change “transitive” to “relational” (WJ to CSP, Jan 24, 1894).<sup>95</sup>

This is exactly where the debate turns from a verbal — though important — one into a real one. This was plainly jumping out of the frying pan into the fire, since “relational” was already used in the logic of relatives and could refer to anything dealing with relations. Worse still, it introduced a crucial ambiguity into the account of the “stream of thought”, for it betrayed a preference for the first type of interpretation mentioned. Peirce, who was less reluctant to admit the reality of relations and who held that “the essence of thought lies in the law of relationship that it implies” (“Question 36”),<sup>96</sup> had an acute perception of this shift:

When you shoot one of our “transitive” thoughts on the wing, transfix it and make it “substantive”, *then* you have the idea of a relation; and until the thought ceases to be transitive it has no consciousness of the relation. While it is transitive, it is a certain sense what you might call *relative* but it is not *relational*.<sup>97</sup>

It is thus likely that James inclined towards the first solution, for he deemed “volatile” too metaphorical. On the contrary, Peirce’s guess was that if James had discovered something in the “Stream of Thought” Chapter, it concerned the process by which an act can become the subject-matter of another act, and *this* was obscured by James’s new term, since he suggested that the relevant opposition was between “relational” and non-relational, and not between an act and the result of an act.<sup>98</sup> James’s new term no longer allowed a distinction to be made between explicit relations (in a diagram for example) and ‘moves’ in a train of thought. But resignation was not among Peirce’s dispositions, for, still relying on Greek terminology, he proposed two Homeric terms: “Homer speaks of winged and unwinged words to denote two different kinds or grades of attention. That is, that is what seems to be meant, if anything is meant. Words are always winged in the *Iliad*, I believe, and unwinged in the *Odyssey*. Shall we say ‘pteroent’ and ‘apteroent?’”(CSP to WJ, 28 Jan. 1894). James’s answer is not known, but anyway the problem was not settled for Peirce, for when he wrote his definitions for Baldwin’s *Dictionary* in 1900, he came back to James — then in Europe — to again suggest the same distinction, warning James that, even though these words were “fantastic”, James’s standing was “such (he) could afford for one to use such terms.”<sup>99</sup> Of course, James was wary of such “Greek technicality”, and proposed “connective” instead.<sup>100</sup> This seemed to put an end to the discussion, and one may doubt the influence of Peirce’s suggestions on James for James wrote the entry for “substantive and transitive states” himself,<sup>101</sup> returning to the term “relational”, but this exchange proves at least that, within a period of ten years, Peirce tried several times to make use of, and to improve on, James’s intuition. The question then turns out to be: for what purpose exactly?

#### *Transient Elements and Hypostatic Abstraction*

The whole answer depends on the interpretation we are to make of the difficulty of “catching” the transient elements of the “stream”. Where James held:

Let anyone try to cut a thought across in the middle and get a look at its section, and he will see how difficult the introspective observation of the transitive tracts is. The rush of the thought is so headlong that it almost always brings us up at the conclusion before we can arrest it. (PPI:244)

Peirce could challenge:

To cut a thought across and look at the section requires no introspection. It is one of the principal methods in mathematics, which is in no degree introspective.

Treating operations as quantities is one of a hundred familiar examples.<sup>102</sup>

“Cutting a thought across” requires no introspection, for in Peirce, as in Frege, a thought is not first and foremost a psychological event, but is something which can be dissected by logic alone.<sup>103</sup> James points to a difficulty in “introspective observation”, and the difficulty is clearly a psychological one.

The attempt at introspective analysis in these cases is in fact like seizing a spinning top to catch its motion, or trying to turn up the gas quickly enough to see how the darkness looks. (PP1:244)<sup>104</sup>

This is exactly where the two philosophers depart: a thought is not an intuition or an image, as other nominalist philosophies would have it. The quantification of operations is clearly the use Peirce considered for James’s distinction, but this in no way leads to a psychologization of mathematics. This explains in part why the two men disagreed on the philosophical consequences of what James took to be an “introspective difficulty”:

The results of this introspective difficulty are baleful. If to hold fast and observe the transitive parts of thought’s stream be so hard, then the great blunder to which all schools are liable must be the failure to register them, and the undue emphasizing of the more substantive parts of the stream. (PP1:244)

There were important gaps in the philosophical picture here, as far as the history of philosophy is concerned, for only two standpoints on the problem of relations were represented, both denying the reality of relations, and Peirce’s last question pointed to precisely another treatment of relations, one less prone to declare them unreal: “Why are the shallow blunderers alone noticed and those who study the subject of relation closely and accurately, undeterred by its requiring “hard” thinking ignored?” (“Question 44”).<sup>105</sup> The “shallow blunderers”, even though they might appear to occupy different positions, as intellectualists and sensualist atomists do, share at least one important assumption: they deny the reality of relations, the “Sensationalists” holding them to be *mere* “verbal illusions”, the “Intellectualists” making them the corollary of a *mere* intellectual activity, but when these two positions are dismissed, many realist approaches of relations still remain to be considered.<sup>106</sup> Peirce, referring to the serious ‘students’ of the subject of relations, of course had his own works in view. In “The Critic of Arguments”, (1892),<sup>107</sup> he argued, against the common prejudice, that metaphysics required no “hard thinking” at all, but that it was “occasionally

requisite" in mathematics.<sup>108</sup> The students undeterred by the "hard thinking"-requirement are thus those who are ready to face it in its native field, that of mathematics. From this standpoint, it is peculiarly interesting to see that in the second section of the "Critic of Arguments", Peirce, reflecting on the semantics of diagrams, and feeling that Kempe's overlooking of Thirdness was possible if and only if the representative aspect of diagrams itself was overlooked, claimed that the main difficulty was not so much to *use* the diagrams as to *introduce* suitable new abstractions into them, which is exactly the difficulty of all "difficult reasoning":

But I remark that the diagram fails to afford any formal representation of the manner in which this abstract idea is derived from the concrete ideas. Yet it is precisely in such processes that the difficulty of all difficult reasoning lies. [...] *The process consists, psychologically, in catching one of the transient elements of thought upon the wing and converting it into one of the resting places of the mind.* The difference between setting down spots in a diagram to represent recognised objects, and making new spots for the creations of logical thought, is huge. To include this last as one of the regular operations of logical algebra is to make an intrinsic transmutation of that algebra.<sup>109</sup>

In other words, James had made a good *psychological* description of a process vital to theorematic reasoning, and his insight had to be interpreted within the field of logic itself. There is no doubt that Peirce had James's distinction in mind, for a little earlier in the text, Peirce developed his idea that the essence of thought lies in the relationship it implies even in the case of simple sentences like "This is blue": this thought "when explicated, develops into the thought of a fact concerning this thing and concerning the character of blueness. Still, it must be admitted that, antecedently to the unwrapping of your thought, you were not actually thinking of blueness as a distinct object, and therefore were not thinking of the relation *as a relation*. There is an aspect of every relation under which it does not appear as a relation."<sup>110</sup> This is exactly the difficulty of diagrammatic reasoning: to make the relations appear *as* relations, and Peirce clearly acknowledged James's views.<sup>111</sup> It was not difficult for the "serious students" of relations but nonetheless necessary. Thus, when he complained that James overlooked those who had treated the problem of relations "closely and accurately", Peirce was referring to his own logical works. It is now clear that he tried himself to show the connection between the psychological process described by James and the mathematical abstraction that he was able to describe fully thanks to the logic of relatives.<sup>112</sup>



If we stick to the non-psychological view of thought developed by Peirce, there is still a lot to be made of James's remarks, and this is just what Peirce proceeded to do: elaborating his own approach of the process of abstraction in mathematics, he referred to this section of James's *Principles* in public on several occasions after "The Critic of Arguments". In 1893, describing the passage from "the concrete 'white' (adjective) to the abstract 'whiteness,' or 'white' (substantive) ", he defined abstraction as "a peculiar act", "consisting in seizing evanescent elements of thought and holding them before the mind as 'substantive' objects, to borrow a phrase from William James."<sup>113</sup> In 1896, using his own proposed distinction between *pteroentic* and *apteroentic*, he applied it to the understanding of mathematical operations in his "Lessons from the History of Science",<sup>114</sup> and for Baldwin's *Dictionary*, though he did not contribute an entry for "pteroent", Peirce developed the substance of the argument in the entry for "relatives", with the same reference to James.<sup>115</sup> The stream of thought would thus find its proper locus in the theory of hypostatic abstraction,<sup>116</sup> and when Peirce claimed, some years later, in "A Neglected Argument...", that he shared some ideas with the other pragmatists as regards hypostatic abstraction, it is thus not unlikely that he had the *Principles* in mind rather than more recent works by James or Schiller (EP2:450; 1908).

#### *Conclusion: Principles and Methods of Psychology*

In conclusion to the present inquiry, I should mention three results. First, I hope that the dialogue that I have tried to reconstruct sheds a different light on the Peirce-James relationship. Peirce read carefully James's psychology. He commented on it with an open mind, trying to use James's insights, and trying to avoid his fallacies. Christopher Hookway has shown how exactly "the fundamental differences between the "pragmatisms" of Peirce and James reflect differences elsewhere in their thought."<sup>117</sup> I think that their differences as regards psychology are an important context to this general question.

The second result concerns the philosophy of psychology. Peirce did not deem James's account of the "Psychologist's fallacy " intelligible ("Question 19"). However, he was quite aware of a tension between the naturalist stance of the *Principles* and the methodological dualism endorsed by James. Peirce suspected James of being himself guilty of the "Psychologist's fallacy", with respect to his use of physiological theories.<sup>118</sup> The fact is that Peirce had a very poor opinion of James's methodology of psychology. When he first read the *Principles*, he was floored at the outset by James's claim that psychology — as physics — must accept its data "uncritically" (PPI:137; see "Question 12"). Such a view was at odds with Peirce's ideas about science and inquiry, and one should not be surprised at the tone of the 1891 "Review", the first part of which was mainly an elaboration on this theme. James's "methodological dualism" was in no way neutral as regards metaphysics. James had claimed that knowledge as relation remained "mysterious" as ever, and that — as a scientist — the

psychologist could only endorse a “thoroughgoing dualism” (PP1:218). This was, to Peirce’s eyes, inconsistent with the scientific attitude praised elsewhere by James: “So the psychologist is obliged to assume an extreme metaphysical position and cannot maintain anything like the physicist’s cool attitude. Whatever may be the merits of this as psychology, it seems to me bad metaphysics quite irrespective of the truth or falsity of dualism” (“Question 27”). James’s methodological principles have thus considerable metaphysical implications, for it is impossible to entertain a methodological dualism if one does not subscribe, in some measure, to a version of pre-established harmony (PP1:220-221), even though as an individual one could entertain a monistic metaphysics. This opposition between the methodological assumptions and metaphysics was in fact the opposition between two kinds of metaphysics: a “scientific” one and a private one. At any rate, it was more than Peirce could stand: it seemed “far better to abandon a study which, for the present, can only be built on such foundations” (“Question 28”). The priority was to make explicit the implicit philosophy of psychology. From this standpoint, it is more than possible that Peirce held his own metaphysics to have provided such a basis, and it is certain that he thought that the development of psychology had refuted James’s anti-metaphysical claims. It was already the case in 1892, in his review of the briefer *Psychology*<sup>119</sup> and, as the years went by, Peirce grew confident in the idea that this was the main flaw of the *Principles*. In 1901, in his review of Ribot’s *Dictionary*, he wrote: “Indeed, at the time James’s classic appeared — only a decade back, but it seems an age — the disposition among [psychologists] was to cut the acquaintance of the metaphysicians altogether” (CN3:35, 1901). It is very clear that Peirce thought that James’s motto was a “thing from the past”, for he soon added, in another review, that nobody would subscribe to this view anymore: “[the fundamental conceptions of psychology] are not by any means thoroughly clear, even yet; but probably nobody would now propose, as James then did, to write a psychology altogether uninfluenced by any metaphysics. As Ladd well names it, the “clandestine” metaphysics which such an attempt inevitably brings with it, is all the more dangerous from its lying in ambush” (CN3:49, 1901). The second result of the present paper is thus to show which implicit metaphysics was “lying in ambush” behind James’s psychology, and what were Peirce’s alternatives.

The third result relates to the logic of psychology. James Mark Baldwin notoriously opposed the “literary writers, citing Emerson and James”, and those, “among them notably C.S. Peirce, advocating his views in the *New York Nation*, who proposed to cut loose entirely from popular usage and coin a clear and consistent terminology for the mental and moral sciences as had been done for mathematics and symbolic logic.”<sup>120</sup> This certainly was a sweeping statement, but the dependence of psychology on logical principles pointed to a genuine Peircian insight. Peirce remarks in 1902 that “it is true that the psychical sciences are not quite so dependent upon metaphysics as are the physical sciences; but, by way of

compensation, they must lean more upon logic" (1.250). I shall not embark here on Peirce's classification of sciences but Peirce's 1887 letter, his review of the *Principles* and his "Questions" on the *Principles* are of a great help in understanding the nature of the dependence of psychology on logic. As he had new ideas about logic, Peirce held that most of the books on psychology had to be rewritten: "On psychology [...] which is to be the great science of the hundred coming years, logic must exert weighty influences. About logic, I have something to say which other men have not thought of, and probably may not soon think of."<sup>121</sup> Such a project implied a new approach to perception, to consciousness, to abstraction and to thought in general. Where James had stated that the "Thinker" was the "Passing thought" (PP1:342), Peirce went one step further to show that this thought was in no way "within": "But if it is to mean Thought it is more without us than within. It is we that are in it, rather than it in any of us. Of course I can't explain myself in a few words; but I think it would do the psychologists a great service to explain to them my conception of the nature of thought" (8.256, 1902). How this "service" might be understood is what I tried to sketch here.

Université Paris I Panthéon-Sorbonne  
girel@univ-paris1.fr

#### NOTES

This is an abbreviated version of a paper submitted to the Peirce Essay Contest. I am very grateful to Paris I Sorbonne's *Ecole Doctorale* for allowing some time of research for my dissertation at the Peirce Edition Project in March and April 2001. I am much indebted to Nathan Houser, André de Tienne, and Cornelis de Waal, for their invaluable help during my stay. Thanks are also due to the audience of the *Seminar on Pragmatism and American Philosophy* (IHPST, Paris I, Paris). A previous version of Sections 1 and 2 was delivered in a seminar at l'Ecole Normale Supérieure (Paris), Feb. 8, 2001, and some materials were discussed during sessions of the *Seminar on Pragmatism* in November and December 2000. Randall Dipert and Guillaume Garreta made useful remarks on a first draft, but I am of course responsible for the mistakes that might be present in this paper.

1. A minimal bibliography would include: Apel, Karl Otto. *Charles S. Peirce: From Pragmatism to Pragmaticism*, John Michael Krois (trans.), Amherst: University of Massachusetts Press, 1981; Ayer, A.J., *The Origins of Pragmatism; Studies in the Philosophy of Charles Sanders Peirce and William James*, London, Toronto: Macmillan, 1968; Colapietro, Vincent. "Tell Your Friend Giulliano...": Jamesian Enthusiasms and Peircean Reservations," *Transactions of the Charles S. Peirce Society*, 30, no. 4 (1994): pp. 897-926; Fisch, Max H., "Alexander Bain and the Genealogy of Pragmatism," *Journal of the History of Ideas*, 15 (1954), pp. 413-444, "American Pragmatism Before and After 1898," In *American Philosophy from Edwards to Quine*, Robert W. Shahan (ed.), pp. 78-110, Norman: University of Oklahoma, 1977; "Was There a Metaphysical Club in Cambridge: A Postscript," *Transactions of the Charles S. Peirce Society*, 17 (1981), pp. 128-

130; Gavin, William J., "Peirce and 'the Will to Believe'," *Monist*, 63 (1980), pp. 342-350; Haack, Susan, "Pragmatism and Ontology: Peirce and James," *Revue Internationale de Philosophie*, 31 (1977), pp. 377-400; Hookway, Christopher, "Logical Principles and Philosophical Attitudes: Peirce's Response to James's Pragmatism," In *The Cambridge Companion to William James*, Putnam, Ruth Anna (ed.), New York: Cambridge University Press, 1997; Madden, Edward H., "Discussing James and Peirce with Meyers," *Transactions of the Charles S. Peirce Society*, 25 (1989), pp. 123-148; Meyers, Robert G., "The Roots of Pragmatism: Madden on James and Peirce," *Transactions of the Charles S. Peirce Society*, 25 (1989), pp. 85-121; Murphy, John P., *Pragmatism: From Peirce to Davidson*, Boulder: Westview Press, 1990; Philstrom, Sami, "Peirce 'Vs.' James: Susan Haack on Old and New Pragmatism," *Philosophical Forum*, 29, no. 2 (1998), pp. 66-89. I have been much helped by Hookway (1997).

2. Menand, Louis, *The Metaphysical Club*, 1st Edition, New York: Farrar Straus & Giroux, 2001.

3. Fisch (1965), in Fisch, Ketner, and Kloesel (1986), p. 133.

4. I have tried to put this relationship into perspective in the Second Chapter of my dissertation.

5. See Cadwallader (1975) and Cadwallader, "C.S. Peirce: The First American Psychologist", *Journal of the History of Behavioral Sciences*, 1974. Behrens (1993), Hendrick (1993).

6. For James's "athlete-thinking Principles", see R400: 47 (1893). See also 5.414, 8.55 (1891); CN1:153 (1892), CN2: 163 (1898), CN3: 35 (1901), CN 3:49-50 (1901).

7. See, for example, the contributions collected in Margaret E. Donnelly (Ed.), *Reinterpreting the Legacy of William James*, Washington D.C.: American Psychological Association, 1992, and in particular E.I. Taylor, "The Case For a Uniquely Jamesian Tradition in Psychology", pp. 3-28, for many insights and references.

8. On this "stage", see Bouveresse J., *Langage, Perception et réalité*, tome, 1, Nîmes: Jacqueline Chambon, 1995; Hatfield (1990), and Meyering, T.C., *Historical Roots of Cognitive Science: The Rise of a Cognitive Theory of Perception from Antiquity to the Nineteenth Century*, (Vol. 208), Dordrecht-Boston-London: Kluwer Academic Publishers, 1989.

9. A.R. Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain*, New York: G.P. Putman and Sons, 1994.

10. Cf. Putnam, Hilary, *The Threefold Cord*, New York: Columbia University Press, 1999, p. 175.

11. Jackman (1999).

12. Goodman (2002), and esp. Ch. 3, "Wittgenstein and *The Principles of Psychology*. An Introduction". The quote from Wittgenstein's notebooks is given p. 63.

13. See Kasser (1999) to that effect. See also Tiercelin (1993) and Tiercelin (1995), pp. 42-43: taking into account certain facts of psychology does not involve any psychologism.

14. William James to Henry James, Sept 19, 1887 (COWJ 1:68).

15. I shall not embark on the narrative of this complex story here. On James's attempts to attend Helmholtz's lectures, see COWJ 4:226, 234, 243, 292, 318, 327-28 (1868). For later attempts, see COWJ5:290 ("Today, I have heard Helmholtz give the most idiotic lecture I have ever listened to..."). For still later encounters, see COWJ 2:279-80 (1893) and COWJ 7:486.

16. In 1887, James published a series of papers on "The Perception of Space" in four *Mind* installments. They were republished, with revisions and additions, in the *Principles*. If there are clear references to the second and third papers, it is not obvious that Peirce had the fourth installment, then just published (James received the off-prints on Nov. 9, see COWJ 6:287).

17. COWJ 6:279-280.

18. See Peirce's mild agreement on James's critique of muscular sensations.

19. I am only dealing here with the aspects of this theory which are immediately relevant to understand Peirce's reaction. For a finer-grained picture, See Myers (1986, Ch. 4). On the relationships between German psycho-physiology and Kant, see Hatfield (1990).

20. See in particular W : Eph, 6 (1876); See also COWJ 6:204 (1887, To Stumpf) where James says that most of the essays on space were written "6 or 7 years ago". For a sketch of the debate and a stronger commitment from James, see W:ECR, 377-378 (1881). It is fair to say that the discussion of space has to be read also from the perspective of James's discussion of Hegel. For more on this, see Davidson's obituary and James's account of the meetings of Harris's Hegel club where, he says, "we invariably wound up with a quarrel about Space and Space-perception" (W:ECR, 89 (1903)). Still, if in the philosophical essays, Hegel is a prominent character, in the chapters of the *Principles*, Helmholtz and his followers represent *the* important paradigm to overcome. See, among many other instances, COWJ 6:174 (1886), where James explains why his series on space can be read as a "confutation (...) of Helmholtz's doctrines of unconscious inference and of the intellectual character of perception".

21. The first paper on space properly so called is "The Spatial Quale" (W, Eps:62-82), whose results are developed further in the series on "The Perception of Space", *Mind*, 1887, n°1, 2, 3, 4.

22. See *Physiological Optics* (1867), §§26&33, *passim*.

23. "All *deducers* of space are, I am sure, mythologists" (COWJ 5:84, 1880). "I call this view mythological, because I am conscious of no such Kantian machine-shop in my mind, and feel no call to disparage the powers of poor sensation in this merciless way" (PP2:275). In a letter to Stumpf, dated Nov. 15, 1884, James says he agrees on the "general theoretic tendency, away from "psychomythology" and logicalism" (COWJ 5:532), and there are important precisions on Kant and space at COWJ 6:429 (To Croom Robertson, Aug. 22, 1888).

24. James, W, ECR:378. Similar comparisons are made in "Are We Automata" (1879) and "The Spatial Quale" (1879). W, Eps:resp. 47-48 & 81-82.

25. PP2:196 and 2:281.

26. PP2:1.220 f. See a fine analysis of this problem in Reed (1990). I am here drawing heavily on this excellent paper.

27. The best statement of this fallacy, as far as space-perception is concerned, is the following: "Mere acquaintance with space is treated as tantamount to every sort of knowledge about it, the conditions of the latter are demanded of the former state of mind, and all sorts of mythological processes are brought in to help" PP2:2.281; *Mind*, 1887, 547. It is not obvious that Peirce had the last installment at hand, but the psychologist's fallacy is mentioned and summed up p. 187, n. 2.

28. See for example J. Searle, *The Rediscovery of Mind*, Cambridge: M.I.T. Press, 1992, Ch. VII.

29. COWJ 6:219, April 1887.
30. Cf. W:Eps, 64. "The Spatial Quale" aimed at distinguishing the order of coexistents and space: "The *intuition* of a given objective space, with its peculiar *quale*, must not be confounded with the *notion* of the total space, in which that and all other particular spaces lie in determinate order. The latter is a real reconstruction out of separate, but related, elements. The former is a sensation — given all at once, if at all" (W: Eps, 66). The main interest of this paper was to claim that all sensations had an extensity of their own: "It seems to me that all our sensations, without exception, have this special *quale*" (*Ibid.*, 67). See Jubin (1977).
31. PP2.28.
32. PP1.245.
33. As far as perception theory is concerned, this brings James closer to theorists who claim that stimuli can be both complex and relational : for example Hering on contrast (PP2:27), Mach on movement-structures (W:Eps, 100-101n.), and Stumpf, this point being central in this latter's theory of visual and auditive perception (see e.g. COWJ 5:533).
34. Cf. PP2:5.
35. Cf. 5.220 for a similar statement about the blind spot's filling in. See in particular 5.223 for an interesting confluence between Kant and the then recent psycho-physiology.
36. See Murphey (1961), p. 333.
37. There are many illustrations in the correspondence. See 6.182 for one of Peirce's last texts on this issue.
38. 5.263. Peirce and James had extensive discussions over these papers, see COWJ 4:357 (1868).
39. I am much indebted to Max H. Fisch's notes on MS609 and MS 1334 (1905). Both manuscripts mention repeated talks about this example. See, for the 1911 recollection, MS673, published in part as 6.177-184. This last text, which is the most famous of the three mentioned, is the starting-point for any discussion of continuity in Peirce and James.
40. James reports in 1903 an anecdote about Spencer's *First Principles* dating from 1876-77 : "I read this book as a youth when it was still appearing in numbers [The whole volume appeared in 1877, M.G.], and was carried away with enthusiasm by the intellectual perspectives it seemed to open. When a maturer companion, Mr. Charles Sanders 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" (W:Eph, 116; 1904).
41. Compare: "Suppose two men, one deaf, the other blind. One hears a man declare he means to kill another, hears the report of the pistol, and hears the victim cry; the other sees the murder done. Their sensations are affected in the highest degree with their individual peculiarities. The first information that their sensations will give them, their first inferences, will be more nearly alike, but still different; the one having, for example, the idea of a man shouting, the other of a man with a threatening aspect; but their final conclusions, the thought the remotest from sense, will be identical and free from the one-sidedness of their idiosyncrasies. There is, then, to every question a true answer, a final conclusion, to which the opinion of every man is constantly gravitating" (Peirce, W2:468-469). For later reflections by James on this "Peircism", in the context of the Miller-Bode objections, see W:MEN, 68 (1905).



42. Putnam (1997), pp. 167-171.
43. See in particular Hookway (2000), Ch. 5, for some illuminating insights.
44. Such a reading depends on the interpretation of Peirce's reexamination of "how two different men can know they are speaking of the same thing" (W5:225-226, 1885). See Hookway (2000), p. 133-134.
45. C.S.P. to W.J., Oct. 27, 1887. COWJ, 6:279-280. See N. Houser's important remarks, W6:xliv; this seems to be the first letter to James since October 1885.
46. W6: 183.
47. *Mind*, 1887, p. 183. The revised version, in the *Principles*, is entitled: "The Summation of the Sense-Spaces," PP2: 181-188.
48. *Mind*, 1887, p. 193.
49. James describes at length the "incoherence" of the sundry sense-spaces. See for example the dentist-experience: "Though the directions of the scraping differ so completely *inter se*, not one of them can be identified with the particular direction in the outer world to which it corresponds" (*Mind*, 1887, 193). Revised version in the *Principles*: "Even now the space inside our mouth, which is so intimately known and accurately measured by its inhabitant the tongue, can hardly be said to have its internal directions and dimensions known in any exact relation to those of the larger world outside. It forms almost a little world by itself" (PP2:181).
50. *Mind*, 1887, p. 195.
51. PP2:203.
52. Jean-Jacques Rosat (Collège de France) has developed these analogies in a lecture for the Seminar on Pragmatism and American Philosophy (Paris), Feb 25, 2001.
53. *Mind*, 1887, p. 203. PP2: 195.
54. W6: p. xlix.
55. A later discussion of this aspect can be found in RLT:225-227 (1898). This text is discussed in Dipert (1973).
56. In the light of this objective reading of James's description, Peirce went further in "The Law of Mind", as to complete the feeling of bigness with the objective bigness of the feeling itself. See CP 6.133 (EP1:324), where James is quoted.
57. CN1:104-110 (July 2 & 9, 1891). The first installment is mainly devoted to methodological remarks, and the second installment is a close reading of a section on Perception as unconscious inference (PP2: 111-113). I shall deal here with the second, reserving the methodological remarks for the conclusion.
58. Cf. COWJ 2:185-186, Letter to Henry James, Aug. 20, 1891: "I am much amused at your and Alice's indignation over the *Nation's* review, which was a simply eccentric production, probably read by no one. The second installment was utterly unintelligible." James then assumed that the book was sent to "some old foggy" and claimed he "didn't care a single straw for the matter one way or the other, not even enough to find out who wrote it." For Henry's and Alice's reactions, see COWJ 2:182.
59. PP2:111-113. All the quotations from James in the next paragraph are taken in this section.
60. See K. Ludwig, "Explaining Why Things Look the Way They Do", in: *Perception*, K. Akins (ed.), N.Y.: Oxford University Press, 1996, Vancouver Studies in Cognitive Science, vol. 5, pp. 18-61, esp. pp. 29-35.

61. CNI:108.

62. See W5:326-7 (1886). Peirce had defined *Inference*, in the strict sense, for the *Century Dictionary*, as such: "The act of inference consists psychologically in constructing in the imagination a sort of diagram or skeleton image of the essentials of the state of things represented in the premises, in which, by mental manipulation and contemplation, relations which had not been noticed in constructing it are discovered." (as quoted by Peirce himself in CNI:149). In this sense, of course, no perception could be an inference, unconscious or not. See also Peirce's entry for "Inference" in Baldwin's *Dictionary*.

63. See W2, item 30, *passim*.

64. See R400 (1893), p. 47, where Peirce quotes the most relevant statements of the *Principles* on association. See 7.408-409 (1893) for important precisions on the doctrine of association in James, and on "ideas" understood "as objects, direct objects, not matters of psychology" by the associationalists.

65. This a set of forty-five questions (there are two "Question 40") relating to Volume I of James's *Principles of Psychology*. Questions 3, 5, 12, 14, 21-23, 29-33, 36, 41-42 were published as 8.72-90. R.B. Perry, in Perry (1935), vol. II, 105-108, quotes this manuscript in part. It is generally dated c.1891, but there seems to be material evidence that it was written a little later: André de Tienne told me in recent correspondence that its publication was not scheduled before Volume 11 of the *Writings*. "Questions 41-42" in particular fit well with the correspondence between WJ and CSP in 1894. More surprisingly, "Question 28" objects to PP1:220-221 that "there is too much "will to believe" here", which seems to suggest that the question was written after 1896 (date for this essay) or 1897 (date for the book). It is possible that Peirce rewrote all or part of them in the course of time (there are only a few alterations on the manuscript).

66. I shall not address here "Questions" 34, 35 and 40a for they are factual objections.

67. The original version of this paper featured a fuller treatment of other "Questions", in particular those concerning consciousness and continuity. As this paper was already quite long, I had to leave some points for another occasion, but the reader should be aware that I am not overlooking these points, some of which are very important.

68. "Question 32".

69. For an account of this issue, see Taylor (1996: Ch. 1).

70. PP1:105.

71. PP1:105.

72. And did subscribe, see 6.261 (1892).

73. See CNI:114-115 (1891, on conservation vs. "growth").

74. "If the same cell which was once excited, and which by some chance had happened to discharge itself along a certain path or paths, comes to get excited a second time, it is more likely to discharge itself along some or all of those paths along which it had previously discharged itself than it would have been had it not so discharged itself before" (W6:191).

75. There is evidence that Peirce was aware, when giving his lecture on "Habit" in 1898 (RLT:218-241), that he was in part replying to James. "It is now time to inquire whether psychical action be of the conservative or the causal type. You know I make no pretension to competing with the profound psychologists under whom you sit here in Harvard; and I do not promise to bring the question to a satisfactory

conclusion" (RLT:229).

76. "Thus we see how these principles not only lead to the establishment of habits, but to habits directed to definite ends, namely the removal of sources of irritation. Now it is precisely action according to final causes which distinguishes mental from mechanical action; and the general formula of all our desires may be taken as this: to remove a stimulus. Every man is busily working to bring to an end that state of things which now excites him to work" (W6:193).

77. "Is anything harder to imagine how when a current has once traversed a path, it should traverse it more readily a second time, consistently with the conservation of energy? Is it sufficient to explain psychical action by saying it is like something else which is utterly inexplicable?" (Peirce, "Question 9" (*re* PPI:109)).

78. See Garreta (2002) for interesting contrasts with Dewey's own approach, and for contrasts between Peirce and Wittgenstein, Chauviré (2002).

79. See 8.279-301 for a heavily edited version. Unfortunately, these letters were just calendared in COWJ 10 (1902-March 1905).

80. For an overall presentation, see Houser (1983).

81. W6:183.

82. "Question 30" (*re* PPI: 222).

83. *Ibid.*, Emphasis mine. See also "Architecture of Theories", for a similar trichotomy (6.18-21, 1891).

84. Peirce will canvass the same opposition in the "Minute logic": "But in my opinion, by a slight modification the triad may be made to stand for three radically different kinds of elements of all consciousness, the only elements of consciousness, which are respectively predominant in the three whole states of mind which are usually called Feeling, Knowing, and Willing. It is thus raised from a mere loose grouping into a scientific and fundamental analysis of the constituents of consciousness" (7.542).

85. "Question 33" (*re* PPI:231). "Is it not plain that two feelings cannot be compared as they are as pure feelings? If so can a 'likeness' between two feelings possibly consist in anything but their being naturally associated? That granted, is it not certain that feelings ever so much alike do, in that only possible sense, recur? As for sameness, this is a relation which by its nature is restricted to individuals. Feelings are in so far the same as they are alike".

86. Cf. 5.112 (HL, 1903).

87. "Question 29" (*re* PPI: 222).

88. Perhaps exasperated, Peirce contended: "Would it not be fair for the psychologist either to consider the question of experience more curiously or that of the volition less so, with a view to a balanced attitude?" ("Question 25", *re* PPI:216.)

89. PP2:243. This is a revision of "On Some Omissions of Introspective Psychology" (1884), W:Eps, 144.

90. "A World of Pure Experience," (1904), *Essays in Radical Empiricism*, New York: Longmans, 1912, p. 42.

91. See Daniel (1976; Gurwitsch (1943).

92. Peirce developed explicitly his ethics of terminology in RLT:229-231, but we have here the same kind of argument. See "Question 41" (*re* PPI:243): "It is a direful pity the author could not have sufficient acquaintance with the history of words, and of knowledge of their importance, to avoid two of the most objectionable terms he could possibly have selected, for the trade marks of his invention. Why could he not have said 'transitory' instead of taking a word already over burdened with ambiguities. Not that

still better terms might not have been discovered. As for 'substantive', it wouldn't have been much worse if he had called it 'absolute'."

93. "There is nothing in your psychology which serves my purposes better than your distinction between 'substantive' and 'transitive' parts of the train of thought. I had been forced to emphasize a precisely corresponding distinction in logic, where one of the most important and difficult operations is to catch the transitive on the wing and nail it down in substantive form" (COWJ 7:481). This is very likely an implicit reference to the last paragraph of the "Critic of Arguments" (1892): See below.

94. For the reference to De Morgan, see for example W3: 98 (1873). Here is the context for the quote just given: "Why is this word better than 'transient' for your purpose? If I were you, having called the other 'substantive', a word well chosen and derived from the terminology of grammar, I would call these others 'adjective.' I would either go to grammar for both terms or for neither. You might term them 'volatile' and 'sessile'; or, after Homer... 'winged' and 'unwinged'; or, if you want Greek, 'planetic' and 'aplanetic'. Perhaps you mean 'transitive' to be taken from grammar. If so, the analogy is not clear. Besides, that would spoil your 'substantive', which surely has nothing to do with the substantive verb. I wish to make use of the distinction, and hence would like to know what improved terminology you would accept. Very faithfully, CSP" (COWJ 7:482).

95. "To my mind it is well not to strain language already in use any more than one can help in creating technical terms. 'Volatile' and 'sessile' seem decidedly too metaphorical; and in thinking over the matter I don't see why plain 'relational' is not after all the most practical epithet to adopt" (WJ-CSP, Jan. 24, 1894, COWJ 7:483-84).

96. See also: "The truth *as* the matter of conceptions is unimportant (as being of such and such a sort) the relations between them are the thing" ("Question 28").

97. COWJ 7:487.

98. Peirce: "I consider *relational* as the most perversely bad designation it would be easy to give for your 'transitive' states. If you find *volatile* and *sessile* too metaphorical it probably indicates that you conceive the states a little differently from what I do" (28 Jan. 1894, COWJ 7:487).

99. CSP to WJ, Nov 10, 1900. "In your *Principles* I, 273 (? I give the page from memory) you make a distinction between *substantive* and *transitive* elements of thought. It is of the utmost importance in logic. But the *terms* won't do there. To begin with there is no familiar and well recognized balance between them. Then *transitive* is already used in one sense in logic and in another in mathematics, most inconveniently. Yours make a third. *Substantive* is good, very good, in itself. Still, it is too near the grammatical word and yet just differs enough from to threaten inconvenience. I will suggest a very familiar pair of words to which no philosophical meaning has been attached, and yet which would readily stick in the memory. They are fantastic, but then your standing is such you could afford for once to use such terms. Homer, you know, speaks often of *epea pteroenta* and at other times of *epea apteroenta*, winged words and unwinged words. Of course, he did not mean what you do; but what he did mean I don't think anybody knows for certain. Why not speak of *apteroentic* and *pteroentic* parts of the thought? If you approve, I wish to put it under *pteroentic*" (COWJ 9:355). There was no such entry in Baldwin's *Dictionary*, and a brief definition of "Substantive and transitive states" was contributed by James (Baldwin 2:614).

100. "As regards 'transitive' how would 'connective' do to pair off with substantive? Your 'pteroentic' &c. are a frolicsome and pretty pair of terms, but I doubt their adoption by the public, and I have myself a strong aversion to the overgrowth of

greek technicality. Everyone can see at a glance what a 'connective' portion of the thought means," COWJ 9:369 (WJ to CSP, Nov. 26, 1900).

101. Here is James's contribution: "Substantive states of mind are those which represent sensible terms : nouns, verbs, adjectives, etc; transitive states are those which represent relations: such things as are expressed by prepositions, conjunctions, &c. 'Relational states' might be a better term for the latter" (Baldwin 2:614).

102. "Question 42" (re PP1:244).

103. 7.376 (1902). See also this distinction elsewhere in the "Minute Logic" (1902) at 2.184. Peirce holds there that we shall never learn anything about these operations by looking for "what passes through consciousness". It is as if we thought that "in order to make out what the processes of digestion are, it is only necessary to strip a man and watch his belly". See Peirce's remarks on the "resting-places" of mental action.

104. I am skipping "Question 43" (re PP1:244), which is an objection to James's loose use of Zeno's paradox in this context.

105. "Question 44" (re PP1:245).

106. Abbot was one of these, but James's opinion of Abbot's works was quite negative — he held them to be "scholastic rubbish" — and the Royce vs. Abbot polemic did not do a lot to help him change his mind.

107. "I. Exact Thinking," *Open Court*, 6 (22 Sept. 1892), pp. 3391-3394, CP 3.404-414; "II. The Reader is Introduced to Relatives," *Open Court*, 6 (13 Oct. 1892), pp. 3415-3418, CP 3.415-424.

108. 3.406.

109. 3.424 (1892), emphasis mine, For more on diagrams see Chauviré (1987).

110. 3.417 (emphasis mine).

111. Peirce refers to "James's *Principles of Psychology*, vol. 1, pp. 237-271; *Briefer Course*, pp. 160 et seq.", adding nevertheless: "James is no logician, but it is not difficult to trace a connection between the points he makes and the theory of inference" (3.417 n.1). Interestingly, in his *Harvard Lectures on Pragmatism*, Peirce urged that this dissection of thought is the core of the analysis of mathematical reasoning. Cf. HL:131-132 (1903), where the point is made.

112. There are several other textual analogies between Peirce's "Questions" and his "Critic of Arguments". Peirce defines transitive relations at 3.408. On "hard thinking", see 3.413.

113. "Reply to the Necessitarians", *The Monist*, vol. 3, pp. 526-570 (1893), 6.595.

114. 1.83. "Another operation closely allied to generalization is abstraction; and the use of it is perhaps even more characteristic of mathematical reasoning than is generalization. This consists of seizing upon something which has been conceived as a {*epos pteroen*}, a meaning not dwelt upon but through which something else is discerned, and converting it into an {*epos apteroen*}, a meaning upon which we rest as the principal subject of discourse. Thus, the mathematician conceives an operation as something itself to be operated upon" ("Lessons from the History of Science", 1896).

115. 3.642. "One branch of deductive logic, of which from the nature of things ordinary logic could give no satisfactory account, relates to the vitally important matter of abstraction. [...] For by means of abstraction the transitory elements of thought, the {*epea pteroenta*}, are made substantive elements, as James terms them, {*epea apteroenta*}. It thus becomes possible to study their relations and to apply to these

relations discoveries already made respecting analogous relations. In this way, for example, operations become themselves the subjects of operations" (Baldwin's *Dictionary of Psychology and Philosophy*, 1901-1902). For a similar application to collections, multitudes, cardinal and ordinal numbers, see 5. 534 (1905).

116. This kind of abstraction, vital to the theory of theorematic reasoning, should thus not be confused with the other kinds of abstraction developed elsewhere, and in particular with "precession", as some later texts by Peirce reveal: "We shall thus do much to relieve the stem 'abstract' from staggering under the double burden of conveying the idea of precession as well as the unrelated and very important idea of the creation of *ens rationis* out of an (*epos pteroen*) — to filch the phrase to furnish a name for an expression of non-substantive thought — an operation that has been treated as a subject of ridicule — this hypostatic abstraction — but which gives mathematics half its power", 5. 449, EP2: 352. For more on the problem of hypostatic abstraction in Peirce, see Zeman (1982), Short (1988, 1997).

117. Hookway (1997), p. 163.

118. "Question 20" (re PP1: 198). "It seems strange that nothing has been said of the method incessantly employed by the author himself of judging of the mind by cerebral anatomy".

119. CN1:153 (1892). "In psychology the same thing is far more true. The list of metaphysical positions is longer, and they are far more dubious; so much so that students of psychology have hitherto considered metaphysical discussions as unavoidable. Such discussions have by no means been omitted by physicists, although the present unsatisfactory state of molecular theory is in part owing to the small aptitude of laboratory men for the kind of thinking requisite for the solution of such problems. Prof. James's method practically comes to keeping the most general questions out of the focus of distinct apprehension and thus entrapping himself, or at least the reader, into confident but dangerous and unexamined assumptions".

120. Autobiography of James Mark Baldwin, First published in Murchison, Carl. (ed.), (1930), *History of Psychology in Autobiography* (Vol. 1, pp. 1-30), p. 26.

121. Letter to his brother Jem, Oct. 25, 1885, as quoted by the editors of W6, p. 595.

## REFERENCES.

### WORKS BY PEIRCE

I am following the standard bibliographical abbreviations. Peirce, Charles S., *The Papers of Charles S. Peirce* (1857-1914), Abbreviation: R + Manuscript number, or L + letter number. The numbering is that of Robin, Richard (ed.), *Annotated Catalogue of the Papers of Charles S. Peirce*. Amherst: University of Massachusetts Press, 1967. *Collected Papers of Charles Sanders Peirce*, Vols. 1-6, C. Hartshorne & P. Weiss (eds.); Vols. 7-8, A. Burks (ed.), Cambridge, The Belknap Press of Harvard University Press, 1931-35, 1958. Abbreviation: Volume number, paragraph number (ex: 1.331). *Writings of Charles S. Peirce: A Chronological Edition*. 6 vols. Peirce Edition Project (Ed.), Bloomington, Indiana University Press, 1982-2000. (=W+ Volume Number + Page number; Ex: W6:113). *The Essential Peirce: Selected Philosophical Writings*. Vol. 1. N. Houser & C. Kloesel (eds.); vol. 2., Peirce Edition Project (eds.), Bloomington & Indianapolis, Indiana University Press, 1992, 1998 (=EP + volume number + page number; Ex: EP2:113).



*Reasoning and the Logic of Things: The Cambridge Conferences Lectures of 1898*, Ketner, K. (ed.), Cambridge, Mass., Harvard University Press, 1992 (=RLT). *Pragmatism as a Principle and a Method of Right Thinking, The 1903 Harvard Lectures on Pragmatism*, P. A. Turrissi (ed.), Albany, SUNY Press, 1997 (=HL).

## WORKS BY JAMES

James, William, *The Works of William James*, Frederick Buckhardt (ed.), Cambridge (E. U.), HUP, 1975-1988; Volume 1 *Pragmatism* (1975) [=W, P, #]; Volume 2 *The Meaning of Truth* (1975) [=W, MT, #]; Volume 3 *Essays in Radical Empiricism* (1976) [=W, ERE] Volume 4 *A Pluralistic Universe* (1977) [=W, PU]; Volume 5 *Essays in Philosophy* (1978) [=W, Eph] Volume 6 *The Will To Believe* (1979) [=W, WB]; Volume 7 *Some Problems of Philosophy* (1979) [=W, SPP]; Volume 9 *Essays in Religion and Morality* (1982) [=W, ERM]; Volume 10 *Talks to Teachers on Psychology* (1983) [=W, TT]; Volume 11 *Essays in Psychology* (1983) [=W, EPs]; Volume 12 *Psychology: The Briefer Course* (1984) [=W, Ps]; Volume 13 *The Varieties of Religious Experience* (1985) [=W, VRE]; Volume 14 *Essays in Psychical Research* (1986) [=W, EPR]; Volume 15 *Essays, Comments and Reviews* (1987) [=W, ECR]; Volume 16 *Manuscript Lectures* (1988) [=W, ML]; Volume 17 *Manuscripts, Essays and Notes* (1988) [=MEN]. As regards the *Principles of Psychology*, as Peirce references are to the 1890 edition, I shall give the references to this classic edition [=PP#: #. Ex: PP1: 214 refers to Volume 1, page 214]. *Correspondence*: James, William, Elizabeth M. Berkeley, and Ignas K. Skrupskelis (eds.), *The Correspondence of William James* (1994-, 10 Volumes published). Charlottesville, Va. London: University Press of Virginia. (= COWJ #: #).

## WORKS BY OTHERS

Behrens, Peter J.

- 1993 "Peirce's Psychophysics: Then and Now," *Charles S. Peirce and the Philosophy of Science*, E.C. Moore (ed.), pp. 309-318, Tuscaloosa: University of Alabama Press.

Cadwallader, Thomas C.

- 1975 "Peirce as an Experimental Psychologist," *Transactions of the Charles S. Peirce Society*, 11, pp. 167-86.

Chauvire, Christiane

- 1987 Schematisme Et Analyticite Chez C.S. Peirce, *Archives de Philosophie*, 50, pp. 413-437.
- 2002 Dispositions Ou Capacités: La Philosophie Sociale De Wittgenstein, in *La Régularité*, Christiane Chauviré and Louis Quéré (eds.), pp. 25-48, Paris: Editions de l'EHESS.

Daniel, Stephen H.

- 1976 "Fringes and Transitive States in William James' Concept of the Stream of Thought," *Auslegung*, 3, pp. 64-80.

Dipert, Randall R.

- 1973 "Peirce on Mach and Absolute Space," *Transactions of the Charles S. Peirce Society*, 9, pp. 79-91.

Fisch, Max Harold, Kenneth Laine Ketner, and Christian J. W. Kloesel

- 1986 *Peirce, Semiotic, and Pragmatism: Essays*. Bloomington: Indiana University Press.



- Garreta, Guillaume  
2002 Une Régularité Sans Répétition? L'habitude Comme Schème Dynamique. In *La Régularité*, Christiane Chauviré and Louis Quéré (eds.), pp. 137-160, Paris: Editions de l'EHESS.
- Goodman, Russell B.  
2002 *Wittgenstein and William James*, Cambridge: Cambridge University Press.
- Gurwitsch, Aron  
1943 "William James' Theory of the 'Transitive Parts' of the Stream of Consciousness," *Philosophy and Phenomenological Research*, 3, pp. 449-477.
- Hatfield, G.  
1990 *The Natural and the Normative*, Cambridge: MIT Press.
- Hendrick, Clyde  
1993 "The Relevance of Peirce for Psychology," in *Charles S. Peirce and the Philosophy of Science*, E.C. Moore (ed.), pp. 333-349, Tuscaloosa: University of Alabama Press.
- Hookway, Christopher  
1997 "Logical Principles and Philosophical Attitudes: Peirce's Response to James's Pragmatism," in *The Cambridge Companion to William James*, Putnam, Ruth Anna (ed), New York: Cambridge University Press.  
2000 *Truth, Rationality, and Pragmatism: Themes from Peirce*, Oxford, New York: Clarendon Press, Oxford University Press
- Houser, Nathan  
1983 "Peirce's General Taxonomy of Consciousness," *Transactions of the Charles S. Peirce Society*, 19, pp. 331-360.
- Jackman, Henry  
1999 "Prudential Arguments, Naturalized Epistemology, and the Will to Believe," *Transactions of the Charles S. Peirce Society*, 35, no. 1, pp. 1-37.
- Jubin, Brenda.  
1977 "The Spatial Quale': A Corrective to James's Radical Empiricism," *Journal of the History of Philosophy*, 15, pp. 212-216.
- Kasser, Jeff.  
1999 "Peirce's Supposed Psychologism," *Transactions of the Charles S. Peirce Society*, 35, no. 3, pp. 501-526.
- Murphey, Murray G.  
1961 *The Development of Peirce's Philosophy*, Cambridge: Harvard University Press.
- Myers, Gerald E.  
1986 *William James: His Life and Thought*, New Haven: Yale University Press.
- Perry, Ralph Barton.  
1935 *The Thought and Character of William James: As Revealed in Unpublished Correspondence and Notes, Together with His Published Writings*, Boston: Little Brown.
- Putnam, Hilary.  
1997 "James's Theory of Truth," in *The Cambridge Companion to William*

James, Hilary Putnam & Ruth Anna (eds.), New York: Cambridge University Press.

Reed, E.E.

- 1990 "Space Perception and the Psychologist's Fallacy in James's Principles," in *Reflections on the Principles of Psychology: William James After a Century*, Michael G. Johnson and Tracy B. Hanley (ed.), New Jersey: Laurence Elbaum Associates.

Short, T. L.

- 1988 "Hypostatic Abstraction in Empirical Science," *Grazer Philosophische Studien*, 32, pp. 51-68.
- 1997 "Hypostatic Abstraction in Self-Consciousness," in *The Rule of Reason: The Philosophy of Charles Sanders Peirce*, Forster & Paul (eds.). Toronto: University of Toronto Press.

Tiercelin, Claudine.

- 1993 *La Pensée-Signe: Études Sur C.S. Peirce*, Rayon Philo. Nîmes Arles: Editions J. Chambon; Diffusion Harmonia Mundi.
- 1995 "The Relevance of Peirce's Semiotic for Contemporary Issues," in *Cognitive Science, Acta Philosophica Fennica*, 58, pp. 37-74.

Zeman, J. Jay.

- 1982 "Peirce on Abstraction," *Monist*, 65, pp. 211-229.

