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# On Hume on Space: Green's Attack, James' Empirical Response

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WHAT PART OF OUR SPATIAL PERCEPTIONS comes directly from sensation, and what part is contributed by the mind itself?<sup>1</sup> This question proved a thorn in traditional empiricism's side. The difficulty stems from two of empiricism's core commitments. First, canonical empiricists like Berkeley and Hume maintained that perceptions are composed of sensory atoms. Second, they also held that the

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<sup>1</sup>I use the following abbreviations throughout:

- CPR* Immanuel Kant, *Critique of Pure Reason*, trans. Norman Kemp Smith, (New York: St. Martin's Press, [1781, 1787] 1965). References are to the standard 'A' and 'B' edition paginations.
- ECHU* John Locke, *An Essay Concerning Human Understanding*, ed. P. H. Nidditch, from the 4th ed. (Oxford: Clarendon Press, [1700] 1975). References are to the book, chapter, and section numbers.
- EPS* William James, *Essays in Psychology*, ed. Frederick H. Burkhardt, Fredson Bowers, and Ignas K. Skrupskelis (Cambridge, MA: Harvard University Press, 1983).
- GWR* Thomas Hill Green, *Works of Thomas Hill Green*, ed. R. L. Nettleship, 3rd ed., 3 vols. (London: Longmans, Green, and Company, 1894). References are to volume and page numbers.
- INT* Thomas Hill Green, "Introduction to Hume's *Treatise of Human Nature*" (1874), in *GWR*, 1–371. References are to section and, where appropriate, page numbers. Where multiple passages are cited, section numbers follow '§§' and page numbers are omitted.
- PP* William James, *The Principles of Psychology*, ed. Frederick H. Burkhardt, Fredson Bowers, and Ignas K. Skrupskelis (Cambridge, MA: Harvard University Press, [1890] 1981). References are to page numbers.
- THN* David Hume, *A Treatise of Human Nature; Being an Attempt to Introduce the Experimental Method of Reasoning into Moral Subjects*, ed. L. A. Selby-Bigge and P. H. Nidditch, 2nd ed. (Oxford: Clarendon Press, [1739] 1978). References are to the book, part, and section numbers, followed, where appropriate, by page number in this edition.

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distinction between reality and fantasy matches the distinction between what the mind receives from sensation and what it creates in thought. This combination produces a problem concerning perceived spatial relations. If our perceptions are fundamentally atomic, then spatial relations between those atoms must be constructed by the mind. But by empiricists' own lights, this would make spatial relations (like *being to the left or right of, above or below*, etc.) nothing but mental fictions—an embarrassment, especially given the robust role of observable spatial properties in many scientific theories.

Thomas Hill Green, a founder of British idealism, relied on the above argument as a centerpiece in his highly influential and highly critical introduction to Hume's *Treatise* (1874). Green wanted to attack the very idea that the mind is a suitable object for scientific study. Since associationist psychologists of the late nineteenth century had premised their research on a fundamentally Humean conception of the mind,<sup>2</sup> Green sought to undermine the very idea of empirical psychology by attacking Hume.

I have two aims in this essay. One is to come to grips with Hume's view of spatial relations. There have been several recent attempts to defend Hume from attacks of the sort Green pioneered. I shall argue that Green exposed potentially serious problems in Hume's view that these more recent readings have yet to overcome.

My second aim is to show that, in his early work, William James provided a compelling response to Green. James designed a "revised empiricism"<sup>3</sup> that accounted for the facts of spatial perception without succumbing to the aforementioned problems with Hume's theory. But James found he had to give up several of Hume's basic assumptions, including the assumption that perceptual experience is fundamentally composed of psychological atoms. The claim that there are no psychological atoms is interesting because James supported it with experimental data rather than with introspective description or *a priori* argument.

Instead of portraying raw sensation as a collection of atoms, James portrayed sensation as a continuous stream. He then used his new model of sensation to provide an account of spatial perception. The sensory stream contained a native, vague *quale* of extension, he argued; but subjects must learn to identify distinct positions and spatial relations inside that stream. They do this by selectively attending to portions of the perceptual field that are interesting or important. Thus on James' model, a subject cannot come to perceive positions or spatial relations until she takes an *interest* in certain objects in her (perceived) environment. But his model nevertheless supports real ideas of space because, when the mind actively attends to positions and relations, it only *subtracts* or *ignores* extraneous sensory data. Unlike for traditional empiricists, the active mind does not amplify or otherwise distort raw sensation, according to James.

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<sup>2</sup>For two histories of associationism that emphasize Hume's influence, see Robert M. Young, "The Association of Ideas," in *Dictionary of the History of Ideas*, ed. Philip P. Wiener (New York: Scribner's, 1968), 111–18; and Robert M. Young, *Mind, Brain, and Adaptation in the Nineteenth Century: Cerebral Localization and Its Biological Context from Gall to Ferrier* (New York: Oxford University Press, 1970), 94–100. For a reading of Hume's *Treatise* that portrays the development of an early form of associationist psychology as central, see Louis E. Loeb, *Stability and Justification in Hume's Treatise* (Oxford: Oxford University Press, 2002), esp. 29–30, 47–59.

<sup>3</sup>This is James' phrase; see section 2.1, below.

The story of Hume, Green, and James illustrates how porous the boundary was between philosophy and the young science of psychology. What is remarkable is that a treatise in the history of philosophy—Green’s “Introduction” to Hume—should have provided a stimulus to scientific innovation. It was partly in response to Green’s “Introduction,” I argue, that James searched for empirical data that would support a new, post-Humean model of sensation, a model that could set the immature science of psychology on secure footing.

In section 1, I will investigate Hume’s theory of spatial perception and Green’s subsequent attack. In section 2, I will examine James’ response.

## I. GREEN

### 1.1 *A Struggle Over Psychology*

In the 1870s and 80s, a lively debate emerged over the idea that the mind is the sort of thing that can be studied scientifically. On one side were neo-Kantians and Hegelians like Edward Caird (1835–1908), F. H. Bradley (1846–1924), and especially T. H. Green (1836–82). For these critics, psychology provided no suitable foundation for philosophy. At their most extreme, they argued that there was something conceptually incoherent about the notion that psychology could become a genuine natural science.<sup>4</sup>

On the other side were philosopher-psychologists like Alexander Bain (1818–1903), G. Croom Robertson (1842–92), and especially William James (1842–1910). These figures all sought to develop a genuine science of mind. Given the widespread influence of idealists,<sup>5</sup> the psychologist-philosophers could not simply ignore their critics.

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<sup>4</sup>Green, Caird, and allies like Andrew Seth Pringle-Pattison tended to be more extreme on this topic, arguing that empirical psychology was a wholly defective project. Bradley held that empirical psychology is legitimate, but necessarily incomplete as an investigation into the mind. Fred Wilson contrasts Bradley’s more nuanced position to that of Green and Pringle-Pattison, correctly noting that “[t]he point of idealism for Green . . . was to establish that a natural science of human being is impossible,” in Fred Wilson, “The Significance for Psychology of Bradley’s Humean View of the Self,” *Bradley Studies: The Journal of the Bradley Society* 5 (1999): 5–44, at 10. See also Fred Wilson, “Bradley’s Critique of Associationism,” *Bradley Studies: The Journal of the Bradley Society* 4 (1998): 5–60, at 9. I develop a more complete account of this struggle between idealists and psychologists in Alexander Klein, “*Divide et Impera!* William James and Naturalistic Philosophy of Science,” *Philosophical Topics* (forthcoming). Idealists were advancing worries about psychology first articulated by Kant and Hegel, on which see Kurt Danziger, *Constructing the Subject: Historical Origins of Psychological Research*, *Cambridge Studies in the History of Psychology* (New York: Cambridge University Press, 1990), 19–21; David E. Leary, “Immanuel Kant and the Development of Modern Psychology,” in *The Problematic Science: Psychology in Nineteenth-Century Thought*, ed. William Ray Woodward and Mitchell G. Ash (New York: Praeger, 1982), 17–42; and Charles W. Tolman, “Philosophic Doubts About Psychology as a Natural Science,” in *The Transformation of Psychology: Influences of 19th Century Philosophy, Technology, and Natural Science*, ed. Christopher D. Green, Marlene Gay Shore, and Thomas Teo (Washington, DC: American Psychological Association, 2001), 175–93. For a more sympathetic and subtle account of Kant on psychology, see Gary C. Hatfield, “Empirical, Rational, and Transcendental Psychology,” in *Cambridge Companion to Kant*, ed. Paul Guyer (New York: Cambridge University Press, 1992), 200–77; and Hatfield, *The Natural and the Normative: Theories of Spatial Perception from Kant to Helmholtz* [*The Natural and the Normative*] (Cambridge, MA: MIT Press, 1991), esp. chs. 3, 4, and 6.

<sup>5</sup>For instance, Green studied and taught at Balliol College, Oxford, eventually becoming Whyte’s Professor of Moral Philosophy there. His students included idealist luminaries like F. H. Bradley, Bernard Bosanquet, Edward Caird, John Caird, Henry Scott Holland, and R. L. Nettleship; see Louis E.

Surprisingly, the argument began with a long essay on the history of philosophy. Green and his colleague Thomas Hodge Grose edited and reprinted Hume's *Treatise of Human Nature*. The reprint appeared in two volumes in 1874, with a 371-page "Introduction" split between the two.<sup>6</sup> The "Introduction" was written by Green. In it, he undertook an extended criticism of Locke, Berkeley, and Hume. Green saw these empiricist figures as having laid the philosophical foundation for empirical psychology, and thus a chief purpose of undertaking this historical criticism was to undermine the conceptual foundations of mental science. Green was particularly troubled by the notion that empirical psychology could provide a kind of scientific substitute for metaphysical criticism.<sup>7</sup>

### 1.2 *The Reality Principle*

Green attacked many facets of traditional empiricism,<sup>8</sup> but I will focus on his arguments about space perception, to which James responded. We must begin by considering two characteristic commitments of empiricist philosophy, according to Green. One commitment concerns metaphysics, the other concerns the basic structure of perception.

The metaphysical commitment that empiricists share is to what I shall call the "reality principle"—viz., that the distinction between reality and fantasy matches the distinction between what the mind receives passively from sensation and what it actively creates in thought.<sup>9</sup> Though Green's critique of empiricism was wide

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Loeb, *From Descartes to Hume: Continental Metaphysics and the Development of Modern Philosophy* (Ithaca, NY: Cornell University Press, 1981), 31n7. See also John Arthur Passmore, *A Hundred Years of Philosophy* (London: Duckworth, 1957), 55–59. Green's students wrote about him with revolutionary fervor. For example, see Holland's near hagiographic account of Green, quoted in Colin Tyler, "Thomas Hill Green," *Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta (2003 [cited March 2005]), available at <http://plato.stanford.edu/archives/sum2003/entries/green/>.

<sup>6</sup>David Hume, *A Treatise on Human Nature; Being an Attempt to Introduce the Experimental Method of Reasoning into Moral Subjects; and Dialogues Concerning Natural Religion*, ed. Thomas Hill Green and Thomas Hodge Grose, 2 vols. (New York: Longmans, Green, and Co., [1739] 1874).

<sup>7</sup>The "Introduction" is a complex work. Green discussed empirical psychologists at *INT* §§3, 6, 9, 10, 18, 24, 98, 198–200. The discussion of psychology at §§198–200 is especially important because this passage explains the main aim of the "Introduction." True, this passage occurs almost halfway through the work, but its position is nevertheless privileged. Green's explicit discussion of Hume only begins in earnest at §195, and from there until §202, Green provides his entire rationale for undertaking the historical investigation at hand. The rationale is that in the late nineteenth century, associationist psychologists were attempting to build a science of mind atop a fundamentally Humean mental architecture, an architecture that Green thought collapsed in absurdity. For Green's own retrospective description of the "Introduction" as an attack on empirical psychology, see *GWR* 1:373–75. For empirical psychologists' own acknowledgement that Green's historical analysis of Hume was intended as an attack on nineteenth-century empirical psychology, see George Croom Robertson, "Psychology and Philosophy," *Mind* 8 (1883): 1–21. The latter article also articulated the hope—common to Bain and other psychologists—that mental science might provide a scientific replacement for metaphysics.

<sup>8</sup>Green did not actually use the word 'empiricism' in our contemporary philosophical sense. In fact, he used the word infrequently—only four times in the 371-page "Introduction" (*INT* §§118, 119, 224, 227). The word was always used in connection specifically with Locke, never with Berkeley or Hume. Context suggests Green meant the word in its then-colloquial sense, as an epithet signifying the pretension to wisdom by one who is actually shallow—this reading is supported by the analysis of Locke in Thomas Hill Green, "Popular Philosophy in Its Relation to Life" (*GWR* 3:92–125). Nevertheless, for simplicity I follow the convention of using 'empiricism' to characterize the movement Green meant to attack.

<sup>9</sup>Green attributed the reality principle to Locke at, e.g., *INT* §§51, 113, 153, and 194. See also Thomas Hill Green, "Can There Be a Natural Science of Man? I," *Mind* 7 (1882): 15–16, where he

ranging, this was the principle to which he most often returned when diagnosing the underlying cause of empiricism's allegedly diverse philosophical troubles. Green often argued that, *contra* empiricism, the mind does play an active role in constructing our real ideas.

Since I will be focusing on Hume, it is worth noting that Hume scholars now regularly discuss something that sounds very much like the reality principle—but we now call it Hume's 'copy principle'. In effect, Green portrayed the copy principle as an instance of something more general to which Locke and Berkeley both subscribed—as an instance of what I am calling the 'reality principle'. This move underwrote Green's treatment of Locke, Berkeley, and Hume as part of one continuous and substantive tradition, a tradition subject to shared criticisms.<sup>10</sup>

### 1.3 *Psychological Atomism*

I will consider just one of the criticisms to which Green thought this tradition was subject. The trouble is that if empiricists stick strictly to their own principles, they must deny that we ever can get real ideas of extended objects or spatial areas.

To see how Green made his case, we must introduce a second commitment he thought was characteristic of empiricism. Green portrayed Locke, Berkeley, and Hume as all committed to various forms of psychological atomism. I will focus on Green's attack on Hume's version of atomism.

Let us begin by gaining a clear understanding of Hume's specific variety of atomism. Recall that Hume classed perceptions using three sets of distinctions. First, all perceptions are either lively *impressions* or fainter *ideas*. Ideas are always exact copies of impressions (*THN* I.i.1, 1–2). For Hume, 'perception' was a term of art that covers both impressions and ideas, and I will follow his usage.

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(curiously) cited *ECHU* II.xii.1 as a basis for attributing such a principle (he might have done better to cite II.xxx). Green mentioned a principle that was supposed to be Berkeley's downfall at §154. He finally characterized the principle at §158 and it turns out to be exactly the reality principle. At §170 Green discussed how this same principle could lead Locke to materialism and Berkeley to idealism. Green relied on this principle in connection with Hume at §§302, 303, and 345. Green cited the reality principle when discussing the failure of empiricism in general, as well (*GWR* 1:379). Brink is one of the few commentators who accurately pinpoints what I am calling the reality principle as the core philosophical commitment (and alleged failure) of empiricism, as Green saw that tradition; see David O. Brink, *Perfectionism and the Common Good: Themes in the Philosophy of T. H. Green* [*Perfectionism*] (Oxford: Clarendon Press, 2003), 10.

<sup>10</sup>In order to sustain this reading, Green had to give a different treatment of the copy principle than is typical today. Green read the copy principle as a tool for undermining the respectability of certain metaphysical ideas (such as substance, vacuum, and necessary connections in nature). This much is unremarkable. What is controversial is Green's reading of the *way* in which the principle undermines metaphysical ideas. Green saw the copy principle as establishing a criterion for the *reality* (objective reality, to use Descartes's phrase) rather than for the meaningfulness of ideas. Thus, Green often relied on a *Treatise* excerpt that articulated this principle with a distinctive slant: "It must be some one impression, that gives rise to every real idea" (*THN* I.iv.6, 251; *INT* §§205, 209). Notice the emphasis on *real* ideas in this passage. In contrast, today we are apt to read the copy principle as a criterion for something like the *meaningfulness* or *well-formedness* of ideas. Thus we now characterize the copy principle by citing familiar passages from *THN* (typically, I.i.1, I.ii.3) where Hume seems to say that *all* meaningful ideas (not just ideas of what is real) must be copied from impressions. Finally, note that today's reading of the copy principle (and of Hume's meaning empiricism more generally) is not without its problems—for instance, see Louis E. Loeb, "Hume's Explanations of Meaningless Beliefs," *Philosophical Quarterly* 51 (2001): 145–64.

Second, all perceptions must be either *simple* or *complex*. Simple perceptions “admit of no distinction nor separation,” whereas complex perceptions may be analyzed into constituent parts (*THN*I.i.1, 2). Third, Hume divided impressions into those derived from *sensation*, and those from *reflection*. Impressions of sensation appear in the mind “from unknown causes,” while impressions of reflection arise when the mind considers its own ideas (*THN*I.i.2, 7–8).

The simple/complex distinction is worth looking at more closely. Commitment to this distinction is sometimes called ‘psychological atomism’, as by Michael Ayers in connection with Locke.<sup>11</sup> For our purposes, a psychological atomist holds that all perceptions are either simple or complex, and that all complex perceptions can be analyzed into the simple impressions of which they are composed. Hume and (*mutatis mutandis*) Locke were both psychological atomists in this sense, as Ayers and Don Garrett both note.<sup>12</sup> Berkeley was an atomist in roughly this sense, as well.<sup>13</sup>

However, there are important differences between the nature of Lockean psychological atoms, on the one hand, and Berkeleyan and Humean atoms, on the other. Green’s argument that empiricists cannot admit real ideas of space—the argument under consideration in this essay—is specially tailored to Berkeley and Hume’s shared brand of atomism. So I will now distinguish Berkeley and Hume’s view from Locke’s.

Garrett convincingly argues that Hume drew the distinction between simple and complex ideas differently from Locke. When Locke introduced his notion of a simple idea, his chief examples included ideas of qualities, such as the coldness and hardness of a piece of ice, the fragrance and color of a lily, the taste of sugar, and so on. Each such simple idea counts as simple because it has a uniform appearance, and cannot be analyzed into any constituent ideas (*ECHU*II.ii.1). The Lockean simple ideas that compose a perception of, say, an apple might therefore include properties like red, existence, spatial extension, unity, and so on.

In contrast, were Hume citing the simple impressions that compose a visual perception of a red apple, he would have cited *only* a collection of red, extensionless,<sup>14</sup> colored points. These colored points are sometimes called ‘*minima sensibilia*’.<sup>15</sup>

Garrett’s reading of Hume, on which ideas deriving from impressions of sight and touch are composed *always* and *only* of *minima sensibilia*, is perhaps a minority view today, but it is not unprecedented. Green also emphasized that Humean

<sup>11</sup>Michael Ayers, *Locke: Epistemology and Ontology* [Locke] (London: Routledge, 1993), 18.

<sup>12</sup>For more on Locke’s conception of ideas, see *ibid.*, 13–69, esp. 36–43. For Garrett’s view of Hume and Locke, see below. On the relationship between Hume and Locke’s respective atomisms, see Saul Traiger, “Simple/Complex Distinction,” in *Encyclopedia of Empiricism*, ed. Don Garrett and Edward Barbanell (Westport, CT: Greenwood Press, 1997), 394–96.

<sup>13</sup>See below, note 16.

<sup>14</sup>Another account that emphasizes Hume’s claim that our visual and tactile fields are composed of extensionless points can be found in Marina Frasca-Spada, “Reality and the Coloured Points in Hume’s Treatise: Part I: Coloured Points,” *British Journal for the History of Philosophy* 5 (1997): 314–19.

<sup>15</sup>Garrett cites evidence in support of this reading of Hume from *THN*I.ii and I.iv.4 in Don Garrett, *Cognition and Commitment in Hume’s Philosophy* [Cognition] (New York: Oxford University Press, 1997), 60–62, along with evidence about how the view fits with other aspects of Hume’s broader project. One should also note that Hume explicitly distanced himself from Locke’s use of the word ‘idea’. Hume called Locke’s usage “too broad” (*THN*I.i.1, 2; index, 699).

impressions of sight, at least, are always collections of *minima sensibilia* in something like Garrett's sense (see, e.g., *INT* §§243–46, 249, 255, 266, 276).<sup>16</sup> Thus on Green's reading, Hume's specific form of psychological atomism has perceptual corpuscles, in other words *minima sensibilia*, at its ground level.<sup>17</sup>

In summary, Green argued that the combination of two empiricist commitments—the reality principle and psychological atomism—forced Hume to admit an absurdity, that there are no real ideas of space. I have just presented readings of these two commitments. I will now explain exactly how these commitments are supposed to get Hume into trouble over ideas of space.

#### 1.4 *Trouble for Hume*

We have seen that for Hume, visual and tactile perceptions are composed of perceptual atoms. He claimed that when we have a perception of space or extension,<sup>18</sup> we are perceiving nothing but an ordered collection of these atoms. Thus for Hume, the shape of an extended object or spatial area is given to us by the *manner* in which such visual and tactile sensibilia are organized with respect to one another in our perceptual field (*INT* §§244–45; *THN* I.ii.3, 33–39; I.iv.5, 235).<sup>19</sup> Hume often repeated this account, consistently maintaining that impressions of spatial extension are not just bare collections of colored points, but colored points “disposed” or organized “in a certain order” (e.g., *THN* I.ii.5, 62; II.iii.7, 429).

How does the mind form ideas of such organization, though? At (*INT* §234, 194–95), Green noted that for Hume, “the idea of space, like every other idea, must be a ‘copy of an impression,’” citing (*THN* I.ii.3, 33).<sup>20</sup> But if our ideas of extension are copied from the *manner* in which visual impressions are disposed, then these ideas are not copied from any impression, nor even from any collection of impressions. Rather, they are copied from *relations between* impressions. After all, the *manner* in which impressions are arranged is not itself an impression.<sup>21</sup>

<sup>16</sup>Hume's conception of simple impressions is similar to Berkeley's. Berkeleyan psychological atoms are also *minima sensibilia*. There is some debate among scholars over whether Berkeleyan *sensibilia* are extensionless, like Humean *sensibilia*—see David Raynor, “Minima Sensibilia’ in Berkeley and Hume,” *Dialogue* 19 (1980): 196–200—or whether they are extended, albeit very small—see Harry M. Bracken, “Hume on the ‘Distinction of Reason,’” *Hume Studies* 10 (1984): 90–109, at 95. I will be focusing on Green's attack on Hume, not Berkeley, so nothing I have to say will turn on this disagreement.

<sup>17</sup>I shall have no further reason to distinguish Locke's form of atomism from Berkeley and Hume's. So for the remainder of this essay, I shall use the phrases ‘*minima sensibilia*’ and ‘psychological atoms’ interchangeably.

<sup>18</sup>Garrett, *Cognition*, 247n5, claims that for Hume, when we perceive any collection of *minima sensibilia*, we perceive a spatial area. But we only perceive extension in cases where the perceived *sensibilia* are contiguous. He does not cite textual evidence.

<sup>19</sup>See also *THN* I.ii.5, 53.

<sup>20</sup>Green had an irksome habit of putting quotation marks around what were really paraphrases of Hume. At the cited location, Hume did not write that every idea must be a “copy of an impression.” Hume's actual words were: “every idea is deriv'd from some impression.” No gross misrepresentation occurs in this case, but readers should not assume that Green's quotes of Hume are always strictly accurate.

<sup>21</sup>Consider a disagreement over Berkeley's view of space perception. The debate is whether he believed we intuit a spatially-organized, *two-dimensional* visual field that must be transformed by the mind into a three-dimensional field, or whether even the two-dimensional visual field must be actively constructed; see Lorne G. Falkenstein, “Intuition and Construction in Berkeley's Account of Visual



As an illustration, consider the collection of white and black *minima sensibilia* out of which the visual perception of a black globe and white cube would have to be built.<sup>22</sup> These *sensibilia* could be arranged in a great variety of ways—now as a black globe and white cube, now as a black cube and a white globe, now as a black and white portrait of Hume’s favorite uncle.<sup>23</sup> So our perception of the globe and cube must be determined by more than just bare collections of *minima sensibilia*—it must be determined by information about the *organization* of those perceptual simples as well, as Hume recognized.

Green was asking where this information comes from.<sup>24</sup> He insisted that given psychological atomism, Hume could not consistently hold that the information comes from impressions. Instead, Hume must admit that relations between *minima sensibilia* must in fact be supplied by the mind. But given the reality principle, this would entail that ideas of spatial relations are unreal, Green argued.

Why cannot Hume simply stipulate that when we have an impression of, say, a red globe, our idea of the globe is a copy of the entire, ordered impression? The short answer is that if the reality principle is to declare metaphysical ideas to be unreal (ideas like substance and necessary connection in nature), then the prin-

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Space” [“Intuition and Construction”], *Journal of the History of Philosophy* 32 (1994): 63–84. Falkenstein argues that Berkeley held that a two-dimensional visual layout is given in perception. For the case that Berkeley tried (not entirely successfully) to show how even the two-dimensional visual field could be constructed, see Rick Grush, “Berkeley and the Spatiality of Vision,” *Journal of the History of Philosophy* 45 (2007): 413–42. In the “Introduction,” Green apparently assumes that there is a burden on both Berkeley and Hume to show how both the second and third dimensions of visual space could be constructed from *minima sensibilia*. Falkenstein calls the view that even two-dimensional space must be constructed ‘strict constructionism’, and the view was popular among influential psychologists in Green’s day like Bain and Wundt; see Falkenstein, “Intuition and Construction,” 65. Bain was the first financier of *Mind*, where Green would publish his most important attack against psychology (“Can There Be a Natural Science of Man?”). Wundt was also an early contributor to *Mind*. So it may be that Green read his contemporaries’ views about spatial construction back onto Berkeley and Hume.

<sup>22</sup>Hume considers the perception of a black and white globe, at *THN*I.i.7, 25. He does not offer an exhaustive list, though, of simple impressions out of which such complex ideas must be built.

<sup>23</sup>In their discussion of James, Marian C. Madden and Edward H. Madden, “William James and the Problem of Relations” [“James and Relations”], *Transactions of the Charles S. Peirce Society* 14 (1978): 227–46, at 228–29, set up the problem of spatial relations in a similar way. However, they see the problem of relations as a problem internal to empirical psychology. I hold that the chief reason the perception of relations preoccupied James was that this problem is a cornerstone of attacks from idealists like Green. These attacks are supposed to show not just that empiricism is untenable, but that the entire project of using empirical psychology as a replacement for metaphysics is incoherent.

<sup>24</sup>In correspondence, Garrett suggests that impressions are spatially organized from the start, and they get their organization from the spatial relations of the external objects (or “continued and distinct existences,” in Hume’s language) that cause our perceptions. Green, at least, would reject this as an accurate account of Hume’s view. For Green, Hume’s chief philosophical advance over Locke is to have rejected the appeal to external objects to explain anything about the character of perceptions; rather, Hume appeals to perceptions to explain the appearance of external objects (*INT* §232, 192–93). So Green would deny that Hume could cite external objects as the ultimate suppliers of spatial information in our complex ideas of extension. This disagreement about whether Hume believed in the existence of external bodies raises the specter of the New Hume; e.g. see Rupert Read and Kenneth A. Richman, eds., *The New Hume Debate* (New York: Routledge, 2000); and Kenneth P. Winkler, “The New Hume,” *Philosophical Review* 100 (1991): 541–79. I cannot delve into this interpretive debate here. Even if Hume believed in external bodies, the question I am dealing with is not how those bodies could imprint themselves on our minds. The question is how the ordered sets of impressions, *whatever* their origins, could be copied into ideas, on Hume’s view. This is as difficult an issue for the New Hume as for the Old Hume.

ciple must also declare copies of relations between impressions to be unreal—or so Green argues. Let us look more closely at that argument.

In order for there to be an idea copied from a complex impression—for instance, an idea of a red globe—it must be the case that we can attain at least two different ideas from one, complex impression. Suppose I look at a red globe. My impression will consist of a collection of red *sensibilia* ordered in the shape of a globe. According to Hume’s official view, I may then copy an idea of red from the impression. But I may also copy an idea of a spherical shape from that very same impression.

This sounds reasonable until one introduces another important principle Hume used to banish metaphysical ideas. This is sometimes called the ‘separability principle’, and Hume defined it this way:

We have observ’d, that whatever objects are different are distinguishable, and that whatever objects are distinguishable are separable by the thought and imagination. (*THN* I.i.7, 18; see also I.ii.3, 36)

The separability principle asserts that all perceptions<sup>25</sup> that are different can be separated, and that all perceptions that can be separated are different.

The reality principle actually works in tandem with the separability principle to banish metaphysical ideas. The separability principle gives a criterion for identifying independent ideas. The reality principle then requires that if some independent idea is to count as *real* (on Green’s reading; *meaningful* or *genuine* for more recent commentators), it must have been copied from some one impression. The combination of these two principles proves a potent razor for eliminating metaphysical ideas like necessary connections in nature. Since we cannot find a separate, independent impression of a necessary connection between a cause and an effect, we must reject ideas of necessary connection in nature (*THN* I.iii.14, 155–56).

But Hume saw that a tension arises between these principles and his own account of space perception. When we have a perception of a white globe, an idea of the globe’s color *just is* an idea of the globe’s shape, on Hume’s view. There are not two separate ideas, one of the globe’s color, the other of its shape. But by the separability principle, the fact that we can distinguish color and shape (as we have in this very sentence)<sup>26</sup> should suffice to establish that color and shape are two different ideas. But if the globe’s color and shape are two different ideas, then we are back to Green’s worry—there are no separate impressions for our separate ideas of shape to copy. It seems Hume faces a trilemma: admit that spatial relations constitute a major exception to the reality principle, give up the reality principle altogether, or admit that ideas of spatial relations are unreal. None of these choices is attractive.

<sup>25</sup>The quote mentions “objects,” not “perceptions.” But at the end of this section, Hume refers back to “the principle above explain’d, *that all ideas, which are different, are separable*” (*THN* I.i.7, 24; italics original). Although this passage only restates the first conjunct of the principle, the use of ‘idea’ here suggests that by ‘object’ Hume meant to include objects of the mind, or in other words, perceptions.

<sup>26</sup>I adapt this quip from Garrett, *Cognition*, 59.

1.5 *Hume's Attempted Solution*

Hume tried to address the problem. His acknowledgement that the distinction between shape and color appears to violate the separability principle came at the end of *THN*I.i.7. He claimed that figure and color may be distinguishable in some intuitive sense, but they are *not* distinguishable in the sense required by the separability principle. Instead, Hume wrote, figure and color are two different *aspects* of one and the same idea. It is only by drawing what he called a 'distinction of reason' that we come to notice these different aspects of our idea of, say, a white cube.

There is an extended passage (at *THN*I.i.7, 25) in which Hume developed his solution. He wrote that the shape and color of a visual perception are not *really* different or distinguishable. It would never have occurred to anyone to separate the shape and color of one visual perception unless that person first noticed that one perception may resemble different objects in different respects.

Thus when a globe of white marble is presented, we receive only the impression of a white colour dispos'd in a certain form, nor are we able to separate and distinguish the colour from the form. But observing afterwards a globe of black marble and a cube of white, and comparing them with our former object, we find two separate resemblances, in what formerly seem'd, and really is, perfectly inseparable. (*THN* I.i.7, 25)

Consider my perception of a *white globe*. Hume claimed that if I have no other store of perceptions from which to draw, I will be unable to distinguish the shape of the globe from its color. I will have one, inseparable impression composed of a set of white *minima sensibilia* arranged in my visual field in the shape of a globe. Suppose I later have an experience of a *black globe* and of a *white cube*. I notice that the ideas I form from these two new perceptions afford comparisons with two different *aspects* of my one original perception—viz., the white cube resembles the original white globe in color, but not shape, and the black globe resembles the original white globe in shape, but not color.

Practice, Hume continued, then helps us use a "distinction of reason" to separate aspects of visual perceptions such as shape and color:

[T]hat is, we consider the figure and colour together, since they are in effect the same and undistinguishable; but still view them in different aspects, according to the resemblances, of which they are susceptible. (*THN*I.i.7, 25)

Figure and color must always be "consider[ed]" together, since they are undistinguishable. But practice helps us "view them" as different aspects of one perception. Hume concluded that we can never really "consider" figure and color separately:

A person, who desires us to consider the figure of a globe of white marble without thinking on its colour, desires an impossibility; but his meaning is, that we shou'd consider the colour and figure together, but still keep in our eye the resemblance to the globe of black marble, or that to any other globe of whatever colour or substance. (*THN*I.i.7, 25)

Suppose one is asked to consider an idea of the shape of a globe in isolation from its color. Then strictly speaking one is being asked to perform an impossible task

on Hume's view. However, we understand such a request anyway, Hume admitted. We are being asked to consider an idea with both a color and a shape, but to keep in front of our mind's eye only the shaped *aspect* of that idea.

In short, the figure and color of any visual perception are not distinguishable in the sense required by the separability principle. Shape and color are thus not different perceptions, but two aspects of one perception. Since there are no *separate* ideas of figure, Hume thought he was free from the need to find any separate impression from which ideas of spatial relations are copied. Garrett thinks Hume is out of trouble.<sup>27</sup>

### 1.6 Green's Retort

Green, however, was not satisfied. He objected that Hume was determining *ad hoc* which apparently separable ideas counted as truly separable, and which could thus be required (on pain of being counted as unreal) to have been copied from some independent impression. This willy-nilly use of the separability principle undermined Hume's justification both for *demanding* the original impression from which metaphysical ideas like substance might have been copied (*INT* §§208–09), and for *ignoring* the demand for an original impression from which ideas of spatial relation might have been copied (*INT* §§249–50).

Green began the former passage by quoting a *Treatise* excerpt that dismissed metaphysical ideas, such as substance and mode, as unreal. Hume had asked whether the idea of substance was

deriv'd from the impressions of sensation or reflexion? If it be convey'd to us by our senses, I ask, which of them; and after what manner? If it be perceiv'd by the eyes, it must be a colour; if by the ears, a sound; if by the palate, a taste; and so of the other senses. (*THN* I.i.6, 15–16; cited at *INT* §208, 173)

Hume had argued that since no impression of color, sound, etc., could serve as the source impression for the idea of substance to copy, the idea of substance must be unreal. The argument relies on the reality principle, which declares as unreal ideas not copied from impressions. After quoting this passage, Green argued that by the same principle, Hume should admit that ideas of relations, even of natural relations, must also be unreal. Given psychological atomism, it is impossible that a perception of a relation could be conveyed by our senses, Green thought.

To drive the point home, Green then cited his favored *Treatise* passage<sup>28</sup> that expressed a version of the reality principle:

“It must be some one impression, that gives rise to every real idea.” What, then, is the one impression from which the idea of relation is derived? “If it be perceived by the eyes, it must be a colour; if by the ears, a sound; if by the palate, a taste; and so of the other senses.” (*INT* §209, 174; the first quote comes from *THN* I.iv.6, 251)

Of course, Green thought this question has no good answer—there is *no* impression from which any idea of relation can have been derived. The relations between *minima sensibilia* that constitute a globe's shape, for instance, cannot be “perceiv'd

<sup>27</sup>*Ibid.*, 58–64.

<sup>28</sup>See above, note 10.

by the eyes” because only visual *minima* are colored; their *order* is not. Similarly, these relations cannot be perceived “by the ears” because relations are not audible, and so on. Green concluded that if Hume was willing to admit real ideas of relations, no reason remained to treat metaphysical ideas as unreal.

Thirty pages later, Green used a similar strategy to focus on spatial relations in particular. Hume had repeated (at *THN*.ii.3, 34) that figure and color are always given as two “aspects” of one perception. These aspects can only be separated by using a distinction of reason. Green quoted this latter passage at (*INT* §249, 207). On the following page he wrote that “if words have any meaning,” Hume’s account of spatial relations (plus the separability principle)

must imply that the disposition of points is at least a different idea from either colour or tangibility, however impossible it may be for us to experience it without one or other of the latter. . . . Is this “disposition,” then, an impression of sensation? If so, “through which of the senses is it received? If it be perceived by the eyes, it must be a colour,” &c. &c. . . . (*INT* §250, 208)

Green had pointed out that the reality and separability principles combined to form a tool Hume used to banish metaphysical ideas, like the idea of material substance. If Hume now allowed that figure and spatial relations are separable *aspects* of some perceptions, but aspects that do not copy any separate impression, what ground remains for rejecting the notion of substance? Green thought there remained none. As at §§208–09, the upshot was that the reality of ideas of relations—here, *spatial* relations in particular—stands or falls with the reality of metaphysical ideas. *Either* our metaphysical ideas and our ideas of spatial relations are both real, *or* they are both unreal. Hume was not entitled to claim that we have real ideas of relation while simultaneously denying the reality of substance, necessary connections in nature, and so on, in Green’s view.

Hume might reply this way. Suppose one grants that it is *ad hoc* to claim that there are separable *aspects* of ideas (like figure and color) that need not have been copied from separate impressions. This would only be a problem, for Hume, if there were some consistent way to use distinctions of reason to isolate metaphysical ideas that, by Hume’s lights, should count as real. But Green produces no such story, and the burden is on him to do so.

It is true that Green produces no such story, but he might easily have. Though a metaphysician who asks us to think about substance is, strictly speaking, asking us to perform an impossible task, we know what she means (Green might have written, parroting Hume on ideas of figure). She is asking us to consider an *aspect* of a perception. Think of the perception, for example, of a white globe. The metaphysician who wants us to entertain an idea of substance is really asking us to keep in front of our mind’s eye only that aspect of the perception of the white globe that resembles a perception of a yellow pyramid and a perception of a blue cube, but does *not* resemble a perception of injustice or of filial love. In the name of consistency, Hume should have admitted that we can use distinctions of reason to identify a real idea of substance in this way, too (Green might have continued). There is no one impression from which an idea of substance could have been copied, but then neither is there some one impression from which we copy our real ideas of shape. Substance, in other words, is as much a legitimate *aspect* of

our perception of a white cube as is our representation of its shape. So if ideas of spatial relations are real, on Hume's view, then metaphysical ideas (like that of substance at least) must be real, too, Green might respond.

### 1.7 *Summary of Green's Attack*

Green's arguments against Hume's account of space perception can be summed up this way.

Traditional empiricists routinely subscribed to some form of both the reality principle and psychological atomism. The reality principle requires that any given real idea must have been copied from some one impression. Hume added a separability principle that tells us how to *find* the (real) ideas that we can expect to have been copied from an impression. According to this principle, any idea that is separable in thought must have been copied from a separate impression. Now, there is no separate impression from which an idea of a spatial relation could have been copied, Hume admitted. But he held that ideas of spatial relations are not *really* separable—in the visual case, are not separable from ideas of color—in the sense required by the separability principle. Instead, an idea of a spatial relation is merely an *aspect* of a complex visual or tactile perception (such as a perception of a red globe), not a fully separable component. Ideas of spatial relations, therefore, cannot be expected to have been copied from any separate impression, according to Hume. But Green replied that this solution was unsatisfactory.<sup>29</sup> Hume's introduction of "distinctions of reason"—the intellectual method for isolating mere aspects of complex perceptions—opens the door to a host of unsavory metaphysical ideas the reality principle was originally designed to keep out, such as substance. So the cost of giving a coherent, empirical account of space perception, Green argued, was finally the re-legitimization of metaphysical ideas. Since one of Hume's chief concerns was to preserve Locke's ban on metaphysics, Green saw this result as tantamount to a demonstration that the entire empiricist project was a failure.

Recall that Green's main purpose in criticizing Locke and Hume was to convince contemporaries that empirical psychology could not live up to its own hype,

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<sup>29</sup>Chapter 2 of Marina Frasca-Spada, *Space and the Self in Hume's Treatise* (Cambridge: Cambridge University Press, 1998), deals with the objection Green raises, that spatial ideas violate the copy principle. Her solution is to argue that the copy principle is not intended as a hard and fast rule, but as a "maxim" designed to guide experimental inquiry into the nature of the mind (64). By trying to follow the maxim rigorously, we are guided to identify elements of perceptions (such as figure) *not* supplied by impressions. She writes that the copy principle thus "has made it possible to discover and to bracket the mental contents—the elementary perceptions of sight and touch—involved in the origin of the idea of space, and thus to single out the act of the mind as a residue" (75). The product of the "act of the mind" is supposed to be ideas of spatial relations. This is an ingenious solution, but it would not have satisfied Green, for it requires Hume to give up the claim that *all* real ideas are copied from impressions. But that, in turn, means giving up the copy principle (in my terms, the reality principle) as a basis for clearly demonstrating that metaphysical ideas like substance and necessary connection are illusory, it seems to me. In a way, this is Frasca-Spada's point—she emphasizes Hume's use of "allusive, evocative expressions" (74) and "loose language" (68), which suggests that we are wrong to look for cut and dried demonstrations in the *Treatise*. But for Green, this is giving up the game entirely. If Hume allows exceptions to the copy principle, then it is unclear why metaphysical ideas like substance cannot be admitted as reasonable exceptions, as well.

so to speak. That is, it could not provide a scientific substitute for transcendental metaphysics. Associationist psychologists of Green's day typically built their projects on a basically Humean model of perception. However, Green's arguments showed that Hume's model of perception was ultimately incompatible with the rejection of metaphysics. If Hume and psychologists were to permit real ideas of spatial relations, they must also permit real metaphysical ideas, such as real ideas of substance and necessary connection in nature.

Of course Green was not trying (perversely) to use Hume's model of perception as a foundation for metaphysics. Instead, Green wanted a new model of the mind. He held that all meaningful perception presupposes a grasp of metaphysical concepts—not just a concept of absolute space, but also concepts of time, substance, causality, and others. Following Kant, Green argued that these concepts have to be antecedently grasped by a transcendental subject.<sup>30</sup> This transcendental subject cannot be observed because it must stand outside of space and time. Since it cannot be observed, it cannot be an object of study for mental science. One can only investigate the transcendental *ego* through *a priori*, metaphysical reasoning. Green concluded that mental science could not adequately explain the nature of human experience.

In the late 1870s, William James was a relatively unknown psychologist. He took it upon himself to respond.

## 2. JAMES

### 2.1 *Some Context: James and Green*

The year before he died, James published two curious remarks about his own place in the history of philosophy. In *A Pluralistic Universe*, he wrote:

By the time T. H. Green began at Oxford, the generation seemed to feel as if it had fed on the chopped straw of psychology and of associationism long enough. . . . Green's great point of attack was the disconnectedness of the reigning english [*sic*] sensationalism. *Relating* was the great intellectual activity for him, and the key to this relating was believed by him to lodge itself at last in what most of you know as Kant's unity of apperception, transformed into a living spirit of the world. . . . Hence a great disdain for empiricism of the sensationalist sort has always characterized this school of thought. . . . But now there are signs of its giving way to a wave of *revised empiricism*. I confess that I should be glad to see this latest wave prevail; so—the sooner I am frank about it the better—I hope to have my voice counted in its favor as one of the results of this lecture-course.<sup>31</sup>

There is nothing surprising about James portraying himself as advancing British empiricism. That he saw himself as heir to this tradition has been a theme in the

<sup>30</sup>With Brink, *Perfectionism*, 8–9, I see Green's notion of a subject as indebted to Kant's transcendental ego of apperception. To this extent, I also agree with the portrayal of Green in Peter Hylton, *Russell, Idealism and the Emergence of Analytic Philosophy* (Oxford: Clarendon Press, 1990), e.g. 24–25. But Hylton misses what I take to be the chief significance of Hume, for Green's purposes—namely, Green wanted to undermine empirical psychology's claim to be a genuine natural science. See above, note 7.

<sup>31</sup>William James, *A Pluralistic Universe*, ed. Frederick H. Burkhardt, Fredson Bowers, and Ignas K. Skrupskelis (Cambridge, MA: Harvard University Press, [1909] 1977), 8–9; my emphasis on 'revised empiricism'.

secondary literature at least since Perry's classic study appeared.<sup>32</sup> What is noteworthy is James' suggestion that he developed his distinctive form of empiricism in opposition specifically to Thomas Hill Green, the leader of British idealists.

The reference to Green in this capacity was not isolated. In *The Meaning of Truth*, also published in 1909, James wrote:

Years ago, when T. H. Green's ideas were most influential, I was much troubled by his criticisms of English [*sic*] sensationalism. One of his disciples in particular [probably J. E. Cabot]<sup>33</sup> would always say to me, "Yes! *terms* may indeed be possibly sensational in origin; but *relations*, what are they but pure acts of the intellect coming upon the sensations from above, and of a higher nature?" Well, I remember the sudden relief it gave me to perceive one day that *space*-relations at any rate were homogeneous with the terms between which they mediated. The terms were spaces, and the relations were other intervening spaces [footnote citing *PP* 790–94, from "The Perception of Space" chapter]. For the Greenites space-relations had been saltatory, for me they became thenceforward ambulatory.<sup>34</sup>

James claimed he had been bothered by Green's criticisms of "English sensationalism" during the period when Green was most influential. Green achieved international fame in 1874 with his "Introduction" to Hume, and he died in 1882, so the reference is probably to this period. James finally felt he was able to overcome "Greenites" specifically in thinking about spatial relations. Little explanation is given of how his account of spatial relations provides a response to Green or his followers. James just cites a portion of his account of spatial perception from the *Principles*.

These remarks are curious because James did not explicitly mention Green in any major work on spatial perception.<sup>35</sup> One might be tempted to brush off such

<sup>32</sup>See Ralph Barton Perry, *The Thought and Character of William James* [*Thought and Character*], 2 vols. (Cambridge, MA: Harvard University Press, 1935), esp. chs. 33–35.

<sup>33</sup>See Max Fisch, "Philosophical Clubs in Cambridge and Boston: From Peirce's Metaphysical Club to Harris's Hegel Club" ["Philosophical Clubs"], in *Peirce, Semiotic, and Pragmatism: Essays by Max Fisch*, ed. Kenneth Laine Ketner and Christian J. W. Kloesel (Bloomington: Indiana University Press, 1986), 137–70, at 149.

<sup>34</sup>William James, *The Meaning of Truth*, ed. Frederick H. Burkhardt, Fredson Bowers, and Ignas K. Skrupskelis (Cambridge, MA: Harvard University Press, [1909] 1978), 79.

<sup>35</sup>James' first essay on space was "The Spatial Quale," *Journal of Speculative Philosophy* 13 (1879): 64–87, reprinted in *EPS*. "The Spatial Quale" would receive two major expansions, first into a longer article on space perception for *Mind* (William James, "The Perception of Space," *Mind* 12 [1887]), and then into chapter 20 of the *Principles*, entitled "The Perception of Space"—the longest chapter in that long volume. Both the longer versions did conclude with a discussion of Kantian views, as did "The Spatial Quale." But in the mature works, the chief Kantian representatives discussed include Herbart, his followers, and Schopenhauer (*PP* 903). There is a reference to the "Platonizing school in psychology" in the "Perception of Space" chapter (*PP* 790), and though he is not identified by name, Green seems to be James' direct target here. It is well known that Helmholtz was one of James' common targets throughout this work on space (see below, note 42). Indeed, the chief representative of Kantian philosophy James discussed in the earliest piece—"The Spatial Quale"—was Helmholtz. There is less well-known evidence that James saw Helmholtz as an important (though tacit) ally of philosophers like Green, since both held that perception was not possible without extensive intellectual activity. See William James, *Essays, Comments, and Reviews*, ed. Frederick H. Burkhardt, Fredson Bowers, and Ignas K. Skrupskelis (Cambridge, MA: Harvard University Press, 1987), 378; and *EPS* 47–48, 81–82. I owe this last point to Mathias Girel, "The Metaphysics and Logic of Psychology: Peirce's Reading of James' Principles" ["Metaphysics and Logic"], *Transactions of the Charles S. Peirce Society* 39 (2003): 163–203, at 167. On James' tendency to connect Green and Helmholtz (and Peirce) on the topic of space perception, see also *ibid.*, 169, and Girel, "Relations Internes et Relations Spatiales: James, Bradley et Green" ["Relations Internes et Relations Spatiales"], *Archives de Philosophie* 69 (2006): 395–414, at 409–11.



reminiscences as distorted memories of old age—but we have historical evidence to corroborate the account. James' earliest work on space perception, an 1879 essay entitled "The Spatial Quale," was written in the context of a philosophical club then arguing over Green, Hume, and space perception.

James participated in several philosophical clubs, including (most famously) the Metaphysical Club (1871–75), in which the idea of pragmatism was first hatched. He also participated in a second incarnation of the Metaphysical Club from 1876–79.<sup>36</sup> This club began by reading Green's edition of Hume's *Treatise*, especially the lengthy introduction. In 1877–78, the group then moved on to a work by Edward Caird, Green's student and close ally—the *Critical Account of the Philosophy of Kant*.<sup>37</sup> These two works appear to have been especially influential in James' thinking about empiricism.

In June of 1878, James signed a contract with Henry Holt to publish a psychology textbook. After James' marriage in early July, he began to compose the book—his *Principles*—by penning "The Spatial Quale." This piece was a response to his friend and club-mate J. E. Cabot, an admirer of Green.<sup>38</sup> Earlier that year (March 1878), Cabot had delivered a club paper defending an account of space perception the group would have associated with Green and Caird.<sup>39</sup> Cabot's paper was published that summer in the *Journal of Speculative Philosophy*; James' response appeared the following winter in the same journal.<sup>40</sup>

Less than a month after Cabot delivered his paper, he wrote a letter that sheds light on the way battle lines had been drawn among club members. As the group turned its attention to Caird, two camps had apparently formed. One camp was sympathetic to Green and Caird, and defended a Kantian approach to the mind. The other side resisted Green and Caird, taking up the mantle of empiricism by defending an empirical-psychological approach. On March 26<sup>th</sup>, Cabot wrote to Howison (a Cambridge transplant from St. Louis, then a hotbed for neo-Hegelian philosophy):

You shall see my paper & welcome, as soon as I get it back from Mr [G. Stanley] Hall, who borrowed it. I regret to say however that I spent most of the available time in reading the books wh. Mr James lent me, on *the psychological side*; & did not succeed in putting my thoughts into good shape. . . .

We missed you very much: the discussion did not amount to much, partly because Dr James had to go away very soon, and partly because nobody except Dr Hedge, who was present, cared to look at it from *the Kantian side*.

<sup>36</sup>Initial club members included Thomas Davidson, Oliver Wendell Holmes, Jr., Nicholas St. John Green, John Fiske, F. E. Abbot, Joseph Warner, Francis Bowen, C. C. Everett, E. F. Fenollosa, J. E. Cabot, and G. H. Howison; see Fisch, "Philosophical Clubs," 140.

<sup>37</sup>*Ibid.*, 144. Fisch characterized the respective publications of Green's and Caird's books as "the major philosophic events of the decade" for club members at *ibid.*, 146. James' notated copies of the Caird, as well as of Green's edition of the *Treatise* (including the introduction) are both preserved at the Houghton Library, Harvard University. The Green edition of Hume can be found at WJ 540.54, and note that Lii (on space) is especially rich with marginalia. The Caird can be found at WJ 511.41.

<sup>38</sup>Cabot recorded his admiration for Green in an 1875 letter, written the year after the publication of the "Introduction." Cabot wrote that he "takes great comfort in Mr. Green's Introduction to the new ed. of Hume," quoted at *ibid.*, 138.

<sup>39</sup>*Ibid.*, 147–48.

<sup>40</sup>See J. E. Cabot, "Some Considerations on the Notion of Space" ["Some Considerations"], *Journal of Speculative Philosophy* 12 (1878): 225–36. Cabot also published a rejoinder to James; see Cabot, "The Spatial Quale—an Answer," *Journal of Speculative Philosophy* 13 (1879): 199–204.

We were so “demoralized” that we dispersed without fixing upon anything for next time. What shall we do? Will you give us the Caird?<sup>41</sup>

From this letter it appears that the club was arguing about two conceptions of the human mind. We know from the rest of their output that James and Hall would have represented the view here called ‘psychological’, and Cabot, Howison, and Thomas Davidson would have represented the opposed “Kantian” view.

How, exactly, did James’ early work on space provide an empiricist response to “Greenites”? This question is vital if we want to understand James’ place in the history of philosophy. And yet, no answer is available in the secondary literature.<sup>42</sup> To develop an answer of my own, I now turn to “The Spatial Quale.”

James’ response came in two steps. First, *contra* both Green and traditional empiricism, James denied psychological atomism. He offered experimental evidence that our perceptual fields in fact are not fundamentally composed of *minima sensibilia*. Second, James constructed a new model of perception designed to account for these experimental data.

James found he had to reject not just psychological atomism, but also the reality principle. These old commitments did not constitute the actual heart of empiricism, he argued. Rather, the key question was whether one holds scientific rather than transcendental *a priori* methods to be suitable for investigating the mind. Thus James defended empiricism in the sense that he tried to show why our capacity for spatial perception can only be investigated empirically, not through *a priori* speculation.

## 2.2 James’ Response, Step One: The Destructive Project

### 2.2.1 Hume and Green Both Psychological Atomists

Though “The Spatial Quale” is not anthologized in any contemporary collections of James’ philosophy (save for the *Works*), its historical importance is difficult to

<sup>41</sup>Quoted in Fisch, “Philosophical Clubs,” 147; emphasis mine. ‘The Caird’ refers to a paper Howison had in the works on Edward Caird, Fisch claims.

<sup>42</sup>Historians of science and historians of philosophy often portray James’ work on space quite differently. Historians of science often point to Helmholtz (and occasionally Wundt) as targets of James’ work. Two prominent examples include Nicholas Pastore, *Selective History of Theories of Visual Perception: 1650–1950* (New York: Oxford University Press, 1971), ch. 12; and Edward S. Reed, “Space Perception and the Psychologist’s Fallacy in James’ *Principles*,” in *Reflections on the Principles of Psychology: William James after a Century*, ed. Michael G. Johnson and Tracy B. Henley (Hillsdale, NJ: L. Erlbaum Associates, 1990), 231–47. Historians of philosophy have been less apt to read James’ work on space in historical context, preferring to rationally reconstruct Jamesian arguments about the philosophy of perception; e.g., see A. J. Ayer, *The Origins of Pragmatism: Studies in the Philosophy of Charles Sanders Peirce and William James* (San Francisco: Freeman Cooper, 1968), 218–34. Occasionally, the likes of Herbert Spencer and J. S. Mill are cited as targets; e.g., see Gerald E. Myers, *William James: His Life and Thought* (New Haven: Yale University Press, 1986), 115–16. Some historians of philosophy who take more care in placing James’ account of spatial relations into context include Madden and Madden, “James and Relations”; Girel, “Metaphysics and Logic,” and Girel, “Relations Internes et Relations Spatiales.” Madden and Madden emphasize Hartley, Wundt, James Mill, Locke, Thomas Brown, and Herbert Spencer; for more on this reading, see above, note 23. Girel emphasizes the importance of Helmholtz and Peirce to James’ early work in psychology. He is also one of the few who acknowledges that Green was an important target of James’ work on spatial perception; see above, note 35. Fisch (a historian of ideas) has emphasized the significance of Green for James’ early work on space, but does not explain *how* that early work actually provided a response to Green.

overemphasize. The article marks the beginning of James' serious attempt to develop an empirical psychology based on a *stream of thought*, rather than on associations of atomic ideas.<sup>43</sup>

James began his piece by discussing Cabot's "hegelian" (*sic*) view of space perception. According to James, Cabot shared a pernicious assumption with those whom he criticized. The pernicious assumption was that perceptual space is necessarily composed of a network of perceived positions. James explained:

Almost all those who have written on the subject [space perception] hitherto have seemed to regard it as axiomatic that our consciousness of the whole of space is formed by adding together our perceptions of particular spaces; that there can be no perception of any extent at all without a perception of particular positions within that extent, and of their distances and directions from each other. (*EPS* 63)

Cabot—and indeed, Green and Hume—had all assumed that a necessary condition for the perception of any extent was the perception of distinct positions and relations between them. In particular, they held variations of the following view: perceptions of extension are necessarily composed of networks of psychological atoms, or *minima sensibilia*.<sup>44</sup> James' critical project in "The Spatial Quale" was to undercut this common assumption by highlighting counter-examples that were readily available in the experimental-psychology literature of the day.

His strategy was to demonstrate that any account of space perception that accepts this atomistic assumption entails two empirical predictions, both of which contradict available data. First, if perceiving space (or extension) amounts to perceiving relations between *sensibilia*, one would expect to find that every perception of a spatial area (and every perception of an extended object) involves a perception of at least two *minima sensibilia*. Second, suppose one's ability to perceive relations between spatial positions in some area is inhibited. One would expect to find that our perception of that area *as extended* would also be inhibited. Surprisingly, both predictions are contradicted by experimental evidence.

James used both informal experiments readers can perform on themselves and published data from other experimental psychologists to make his case. He began with informal evidence:

If the reader will fix his eye steadily on a distant point, and bring his hand gradually into the field of view, he will first see the hand, and see it as extended and possessing parts, but will be wholly unable to count the fingers. He will see objects on the same portions of the retina without recognizing what they are. In like manner if he turn his head upside down, or get into some unnatural position, the spatial *relations* of what he sees—distances, directions, and so forth—will be very uncertain, positions

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<sup>43</sup>Perry also contends that this early work on space was important in the development of James' empiricism, in Perry, *Thought and Character* 1:564–65.

<sup>44</sup>To be fair, neither Cabot nor Green explicitly said that a perception of extension involves relations between *minima sensibilia per se*. But Cabot defined extension as "otherness, the mutual externality, of the parts" ("Some Considerations," 225), and he wrote that the *perception* of extension requires "the indefinite otherness of the objects of perception" ("The Spatial Quale—an Answer," 199). And Green claimed that no indivisible perception can be a perception of extension because "extension" is "a relation between parts," at *INT* §177, 144. So Cabot and Green agreed with Hume that perceptions of extension are in some sense composed of collections of distinctly perceived positions. Of course, they rejected Hume's view that relations *between* those positions can be objects of perception—Cabot and Green thought the relations had to be supplied by the intellect.

and measurements vague; but who will pretend that the picture, in losing its *order*, has become any the less spatial? (*EPS* 69)

There are two bits of evidence here. First, James points out that when we move our hand into the periphery of our visual field, we perceive the hand to be extended, yet we do not clearly perceive individual fingers. This is an example of an object we perceive as extended without perceiving any distinct spatial positions that compose the perceived object. This violates the first prediction of psychological atomism.

A page later James suggests that if there is any doubt that we perceive the hand to be extended, we should try the same experiment while wiggling the fingers. We now perceive motion, which indisputably involves the perception of spatial area, for James. But we still will not perceive the individual fingers distinctly (*EPS* 70).

The second bit of evidence in the passage just quoted works as follows. James points out that when we move our head into odd positions we seem to lose the ability to measure relations like distance, direction, and so on in a spatial area. But we do not thereby suffer a disruption in our perception *that* what we are looking at is spatially extended. This is an example of a perceived area that violates the second prediction of psychological atomism. Our perception of relations in the visual field is disrupted, but there is no effect on our perception *that* the visual field looks to be extended.

#### 2.2.2 *Against Psychological Atoms: The Spatial Case*

Most psychologists of James' day followed Berkeley and Hume in maintaining that both the visual and tactile fields were built from *minima sensibilia*. Accordingly, James provided experimental evidence that neither sensory modality (*viz.*, sight or touch) is, in fact, composed of *minima sensibilia*. We have just seen some of his evidence concerning the visual field. He included important tactile evidence, as well. To see how the evidence works, it will be helpful to coin some terminology.

Consider the smallest area on a subject's skin that, when stimulated, feels to the subject to be extended. Call this the 'smallest extended area'. Now consider the smallest patch on the subject's skin inside which she will be able to perceive at least two distinct points or positions. Call this the 'smallest pointillistic area'. The first prediction of psychological atomism requires the smallest pointillistic area to be smaller than or equal in size to the smallest extended area. In fact, James shows that the reverse is true. The smallest *extended* area is measurably smaller, as it turns out, than the smallest pointillistic area.

Before looking at how James measured and compared these two values, let us consider *why* atomists are committed to the smallest pointillistic area being equal to, or smaller than, the smallest extended area. Atomists hold that we perceive extension in virtue of perceiving relations *between* multiple *minima sensibilia*. This means that atomism predicts that if there are zero or one *sensibilia* contained in some perception, that perception will not be of extension.

Actually, atomists may differ on the smallest number of related *sensibilia* required for a perception of extension. Some atomists might hold that only two related *sensibilia* are required for such a perception. In that case, one would expect the smallest pointillistic area to be *equal* in size to the smallest extended area. But other atomists might reasonably hold that at least three, perhaps, or four *sensi-*

*bilia*, or whatever, must be drawn together in order to perceive extension. In that case, one would expect the smallest pointillistic area to be *smaller* in size to the smallest extended area. After all, the smallest extended area should now contain at least three *sensibilia*, or four, or whatever; but the smallest pointillistic area, by definition, contains exactly two *sensibilia*. In short, all forms of atomism predict that the smallest pointillistic area should be *smaller* or *equal* in size to the smallest extended area.

James showed that in fact the reverse is true. The smallest pointillistic area is *larger*—by about ten times—than the smallest extended area, given that both measurements are taken on the same portion of skin. James wrote:

If the reader will find a portion of his skin—the arm, for example—where a pair of compass-points an inch apart are felt as one impression, and if he will then trace lines a tenth of an inch long on that spot with a pencil-point, he will be distinctly aware of the point's motion and vaguely aware of the direction of the motion. The perception of the motion here is certainly not derived from a pre-existing knowledge that its starting and ending points are separate positions in space, because positions in space ten times wider apart fail to be discriminated as such when excited by the dividers. (*EPS* 69–70)

Here, James takes the fact that we can perceive motion across a patch of skin as evidence that we feel that patch of skin as extended. So he measures the smallest extended area by measuring the shortest distance of skin across which we can feel motion. He then makes a second measurement on the same patch of skin. When the skin is stimulated by two compass points that are sufficiently close together, blindfolded subjects report feeling only one impression. Thus, James measures the smallest distance between compass points at which subjects can reliably distinguish a dual from a single impression. He takes this distance to give the size of the smallest pointillistic area. But when one actually takes this second measurement, one finds that such an area is ten times *larger* than the smallest extended area—quite the reverse of what psychological atomism predicts.

If James' measurements are right, then the smallest extended area is another example of a patch of perceptual field that appears to the subject to be extended, but does *not* contain at least two *sensibilia*. This is another violation of the first prediction of psychological atomism. Tactile perception of extension, James concludes, cannot be built from relations between *minima sensibilia*. Green and Hume were both mistaken in their shared commitment to psychological atomism.<sup>45</sup>

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<sup>45</sup>A common but misguided view is that since James did not produce many experimental results of his own, and indeed disliked working in his own laboratory, he (as one commentator puts it) was "led to reject experimental psychology"; see Rand B. Evans, "William James, *The Principles of Psychology*, and Experimental Psychology," *American Journal of Psychology* 103 (1990): 433–47, at 440. Evans offers pages of evidence establishing that James did not like to *perform* experiments. Evans then proceeds to discuss James' rejection of experiment as a valuable tool for psychology, as though the two claims were equivalent. Evans finally wonders why American psychologists have been so impressed by James, given the latter's supposed rejection of experiment. I note that James' work on space perception alone shows real interest in and ingenuity at bringing to bear experimental evidence for theoretical needs. True, there were aspects of much "brass instrument psychology" (e.g., the psychology emanating from Wundt's lab) that James rejected, particularly when experimental techniques were premised on psychological atomism, as is rightly noted at *ibid.*, 441–42. But again, one should not infer that it was experiment *per se* that James rejected. James commonly put experimental results to use—often to devastating use—in the *Principles*.

### 2.2.3 *An Objection to James*

An objection crops up here that I owe to Joan Weiner.<sup>46</sup> Perhaps our ability to perceive extension or spatial area is context-dependent in the following sense. Call the smallest area in which a subject can distinguish at least two *minima sensibilia* when confronted with a *moving* stimulus the ‘smallest *moving* pointillistic area’; and call this area measured in the context of stationary stimuli the ‘smallest *stationary* pointillistic area’. James’ results do not preclude that the smallest *moving* pointillistic area may be smaller than or equal to the smallest extended area (this latter is already a moving measurement, note). If this is even a possible result of further testing, James cannot make the following crucial inference. He has demonstrated that the smallest stationary pointillistic area is larger than the smallest extended area. He wants to infer that the smallest pointillistic area *simpliciter* is larger than the smallest extended area. This inference cannot be made if our capacity to perceive *sensibilia* (and in turn extension, supposing atomism to be true) changes depending on whether stimuli are moving or stationary. If this inference is not valid, then James’ evidence that the smallest pointillistic area is larger than the smallest extended area collapses. This evidence constitutes the core of his case against atomism.

James did not anticipate this objection, but we can offer a response on his behalf. For the objection to support psychological atomism (and to count against James), the following assumption must be true. *Minima sensibilia* must change in size depending on the conditions under which they are observed. In particular, the size of tactile *minima* would have to be smaller when observed in the context of motion-perception than when observed in the context of the perception of stationary stimuli. After all, for it to be possible that the smallest moving pointillistic area might be smaller than the smallest extended area, the smallest moving pointillistic area would have to be smaller than the smallest stationary pointillistic area. This is because *smaller than* is a transitive relation, and James has already shown the smallest extended area is smaller than the smallest stationary pointillistic area.

But this assumption—that *minima sensibilia* may change in size depending on the conditions under which they are observed—is not compatible with any atomistic theory of perception available to the late Victorian mental scientist (at least, none that I can find). *A fortiori*, the assumption is not compatible with either Hume’s or Green’s influential forms of atomism, the forms that James was most concerned to undercut. What was controversial was not whether, in any given perception, *some* sensory minimum could be isolated. The controversy was whether a sensory minimum we isolate in one perceptual context constitutes a psychological version of a material atom, a fundamental building block of all experience that remains invariant (in essential respects) across different perceptual contexts.<sup>47</sup> Perhaps

<sup>46</sup>Weiner raised the objection in personal communication.

<sup>47</sup>Berkeley appears to have been the inventor (or at least the popularizer) of such *minima*-based accounts of vision and touch. It is clear, in *An Essay Towards a New Theory of Vision*, that Berkeley thinks the human *visual* field, at least, is composed of some determinite, unchanging number of *minima sensibilia* of fixed and identical size; see A. A. Luce and T. E. Jessop, eds., *The Works of George Berkeley, Bishop of Cloyne* (London: T. Nelson, 1948), vol. 1, 171–239, at §§80–82. Berkeley goes so far as to claim (in §80) that the size of each *minima visibilium* is identical not only for all humans, but for all species, so that each of a ‘mite’s’ *minima visibilia* are always the same size as each of a human’s *minima visibilia*.

a clever atomist could develop an alternative perceptual model where *minima sensibilia* change properties relative to the context in which they are observed, but nevertheless have properties stable enough to warrant being treated as legitimate atoms. But that would require extensive empirical work, and it is unfair to demand that James take on this objection before such a workable alternative is actually developed. So Weiner is right that James' evidence does not count against every conceivable model of perception that might employ perceptual atoms. But his evidence remains a serious problem for any form of atomism premised on the existence of *minima sensibilia* with stable spatial properties. And this includes Hume's and Green's influential forms of atomism.

#### 2.2.4 Against Psychological Atoms: The Temporal Case

Though the focus of "The Spatial Quale" is obviously spatial perception, James also included evidence that psychological atomism cannot constitute a successful theory of *temporal* perception, either. He cited an experiment by the Austrian physiologist Sigmund Exner (a student of Helmholtz). The experiment shows that our perception of motion through time is measurably more acute than our perception of distinct moments. James held that the perception of motion also entailed the perception of temporal duration—and so he concluded that time perception cannot be broken into the perception of a collection of temporal atoms.

Exner had conducted a stroboscopic experiment. He demonstrated that we cannot distinguish which of two sparks has flashed first when their time interval is reduced to .045 seconds. James took this as an approximate measure of how fine-grained our ability is to perceive distinct *moments*, the best candidate for temporal atoms. Now, if the sparks are moved so that their respective circles of irradiation overlap for the viewer, the two events will be perceived as continuous motion—as one spark moving from the location of the first spark's flash to the location of the second. James noted that the interval between the flashes can then be reduced all the way to .014 seconds before the viewer fails to perceive the motion. James thought this result shows that our perception of a continuous temporal duration (in this case, the time lapse between the start and end of the apparent motion in the second measurement) is over three times more refined than our ability to distinguish disconnected temporal *moments* (*EPS* 70–71). James concluded that our temporal experiences cannot be built out of a perception of distinct, passing moments.

In the *Principles*, James included these latter results in the chapters on both the "Perception of Space" and the "Perception of Time." In both chapters, he supplemented the results with accounts of similar experiments (*PP* 578, 811). I include the time experiment here to reinforce my claim that James' early work on space included a set of evidence against psychological atomism in general, and thus provided early support for the notion that raw, sensory experience is a spatially and temporally continuous stream.

## 2.2.5 James' Evidence vis à vis Hume's Ink Spot

How does James' criticism of *minima sensibilia* fare with respect to Hume? Hume did not baldly assert that our visual perceptions are composed of *minima sensibilia*. He offered quasi-empirical evidence of his own:<sup>48</sup>

'Tis therefore certain, that the imagination reaches a *minimum*, and may raise up to itself an idea, of which it cannot conceive any sub-division, and which cannot be diminished without a total annihilation. . . . 'Tis the same case with the impressions of the senses as with the ideas of the imagination. Put a spot of ink upon paper, fix your eye upon that spot, and retire to such a distance, that at last you lose sight of it; 'tis plain, that the moment before it vanish'd the image or impression was perfectly indivisible. . . . Nothing can be more minute, than some ideas, which we form in the fancy; and images, which appear to the senses; since there are ideas and images perfectly simple and indivisible. (*THN* I.ii.1, 27–28)

In the above passage, Hume offered evidence that our visual perceptions are atomic. He directed the reader to put an ink spot on a blank sheet of paper. The reader was to move away from the paper, slowly, until the ink spot disappeared from the visual field. At the moment before the spot disappeared, Hume wrote, that spot must have been perceptually indivisible. The entire visual field was supposed to be made up of tiny, perceived spots, or *minima sensibilia*, each of which is the size of the smallest-perceivable ink spot.<sup>49</sup>

James' data seriously undermine Hume's account of space, it seems to me, insofar as Hume's account relies on the kind of *minima sensibilia* we allegedly isolate using this ink-spot procedure. For Hume, it is only in virtue of perceiving relations between these "perfectly indivisible" *sensibilia* that we are supposed to perceive space or extension.<sup>50</sup> But James' results show that some "perfectly indivisible" patches of skin (Hume's phrase—non-pointillistic areas, in my language) *will still appear extended to the subject*. In particular, subjects perceive the smallest extended area of a patch of skin to be extended, yet indivisible into two or more sensory points. Similar results, I expect, could be reproduced in the center of the visual field.<sup>51</sup>

<sup>48</sup>I thank James Mattingly for pressing me about this passage.

<sup>49</sup>Dale Jacquette characterizes this ink spot procedure as "Hume's justification for his positive doctrine of the existence of extensionless indivisibles as the irreducible constituents of extension"; see "Hume on Infinite Divisibility and Sensible Extensionless Indivisibles" ["Hume"], *Journal of the History of Philosophy* 34 (1996): 61–78, at 62. Jacquette raises an important point—that Hume's *minima*-based account of spatial perceptions appears as part of a larger attack on infinite divisibility, an attack directed at a paradoxical argument from Pierre Bayle. In his encyclopedia entry "Zeno of Elea," Bayle argued that extension cannot exist, because every imaginable conception of extension is inconsistent; see Jacquette, "Hume," 76; and Pierre Bayle, *Historical and Critical Dictionary, Selections*, ed. and trans. Richard H. Popkin (Indianapolis: Hackett, [1697] 1991). The original insights about the historical background of Hume's theory are due to Norman Kemp Smith, *The Philosophy of David Hume* (London: MacMillan, 1949), 284–90, 325–38. One serious question is whether James, given his denial that there are *minima sensibilia*, can provide his own solution to Bayle's paradox. This question is beyond the scope of my paper. There are no mentions of Bayle in the *Principles*, and only one mention of Zeno, at *PP* 237, where James calls the arrow paradox "unfair" without explanation.

<sup>50</sup>For another excellent account that emphasizes ordered *minima sensibilia* as the source of Humean ideas of space, see Lorne Falkenstein, "Hume on Manners of Disposition and the Ideas of Space and Time," *Archiv für Geschichte der Philosophie* 79 (1997): 179–201.

<sup>51</sup>Here is an experiment one could run to establish this: Instead of using an ink spot on paper, one could use a white board with a hole in it, set against a black background. One could then follow



However, James' results concerning the periphery of the visual field by themselves provide enough empirical evidence to seriously undermine Hume in that sensory modality. Again, Hume claimed we perceive extension *in virtue* of perceiving the "manner" in which multiple *minima sensibilia* are arranged in our perceptual fields.<sup>52</sup> James has given counter examples, showing that there exist some tactual and visual areas that we perceive as extended, though those areas do not contain multiple *minima sensibilia*.<sup>53</sup> It does not matter whether these areas are in the periphery of the visual field or on the skin. Since they amount to cases of spatial perception without the perception of two or more distinct positions, they are counter-examples to Hume's view.

### 2.3 James' Response, Step Two: The Constructive Project

#### 2.3.1 Sensations Have Native Extensivity

Now on to step two—James' positive account of space perception.

It will be helpful to begin by noting that James' peers divided theories of spatial perception into two broad classes. One group of theories emphasized an instinctive or innate capacity to perceive extension; and the other argued that we must learn to perceive extension.<sup>54</sup> James held that our awareness of an object or area as extended is native, given immediately in all our sensations. But he held that without learning, areas appear to subjects without either clear boundaries or distinct internal positions. In other words, we have a native capacity for vague

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Hume's suggestion and find the greatest distance at which the hole can be reliably identified by a subject. Then one could fashion a moving piece that fits inside the hole. James' view predicts that subjects will be able to perceive motion inside this hole at even greater distances—distances where a hole fit with no moving parts would be invisible to the subject.

<sup>52</sup>Edward Slowik provides a reading of Hume that suggests a potential response to James, in "Hume and the Perception of Spatial Magnitude," *Canadian Journal of Philosophy* 34 (2004): 355–74. Slowik emphasizes Hume's puzzling claim that "the points, which enter into the composition of any line or surface, whether perceiv'd by the sight or touch, are so minute and so confounded with each other, that 'tis utterly impossible for the mind to compute their number" (*THN* I.ii.4, 45; see also Appendix, 638). Slowik concludes that elsewhere, when Hume wrote that an impression of extension "consists of" *minima sensibilia* (e.g., at *THN* I.ii.3, 38), Hume was claiming only that spatial ideas are, as a matter of *ontology*, composed of *minima sensibilia*. Hume was not claiming that, as a matter of *psychology*, when we perceive extension we are perceiving *minima sensibilia*; see Slowik, "Hume and the Perception of Spatial Magnitude," 371. So even if James can demonstrate the non-pointillistic character of the visual field, this result need not be seen as having any *ontological* implications about the actual constituents of (visual) ideas of spatial relations. But the Jamesian critic has a response, I think. Hume cannot accept that perceptions have an ontology distinct from their appearance. He wrote: "For since all actions and sensations of the mind are known to us by consciousness, they must necessarily appear in every particular what they are, and be what they appear" (*THN* I.iv.2, 190). It is not obvious how a Humean perception of extension could "consist of" *minima sensibilia* without *appearing* to consist of *minima sensibilia*.

<sup>53</sup>James can be thought of as providing rigorous support for the sort of criticism one later finds in Broad's classic critique of Hume on spatial perception. Broad actually performed the inkspot experiment and claimed that, *contra* Hume, the smallest visible spot actually appears as extended; see C. D. Broad, "Hume's Doctrine of Space," *Proceedings of the British Academy* 47 (1961): 161–76, at 165. Broad also claimed that perceived areas appear as continuous rather than as aggregates of discrete points, at 166.

<sup>54</sup>For a useful overview of this division, see James Sully, "The Question of Visual Perception in Germany (II)," *Mind* 3 (1878): 167–95.

spatial perception, but we must learn to perceive distinct positions and relations. In this subsection, I will examine James' account.

Here is how James summarized his own position. He proposed that just as we speak of "intensity" as a fundamental property of all sensation, so we should speak of a sensation's fundamental "extensity" or "voluminousness" (*EPS* 65). He termed this 'the property of extension or spatial *quale*', claiming it

exists at the outset in a simple and unitary form. The *positions* which ultimately come to be determined within it, in mutual relation to each other, are later developments of experience, guided by attention. (*EPS* 63)

So the quality of extension is a basic, native feature of all experience, according to James. Distinct positions and their relationships, in contrast, we must *learn* to pinpoint. (See also *EPS* 71–72.)

### 2.3.2 We Must Learn to "Map" Perceptual Fields

Humean empiricism faced the question of how distinctly-perceived points could be *knit together*, as it were, into a perception of a whole area. But James' explanatory problem ran in the opposite direction. If what is given in sensation is a whole extended area (as James claimed; see also *EPS* 66), then his problem was to explain how subjects ever can come to perceive distinct positions or relations *inside* those areas. In his words, his problem was to specify what kind of experience, exactly, guides the "mapping of retinal space" (*EPS* 73) and of other perceptual fields.

James cited two independent factors. First, when "sensitive surfaces," like a patch of skin, are excited in a *uniform* manner, we are unlikely to perceive distinct locations or relations on that surface. For example, when floating in lukewarm water, it is difficult to feel any distinct point on our skin. However, if one is then poked with a stick, one will have no trouble perceiving the point on the skin being stimulated. So the first factor that teaches us to identify spatial positions is the *non-uniform* stimulation of a patch of our sensory surfaces. These sensory surfaces include the retina, the skin, the ear drum, or the taste buds, or really any part of the body, inside and out, capable of producing sensation. We learn to "map" related spatial positions in the "teeming muchness" of experience when we learn to separate at least three distinct points inside one perceptual field (*EPS* 72).<sup>55</sup>

But James held that this first factor could not fully explain our ability to map our various perceptual fields. There are cases where we sometimes identify distinct points in a perceptual field, though the identified points are qualitatively *similar* to those in the surrounding field. Consider the example of spotting a sail on

<sup>55</sup>For a debate over whether the *spatial position* of an item in the visual field is dependent on that position's relation to other perceived positions, see Albert Casullo, "Perceptual Space Is Monadic," *Philosophy and Phenomenological Research* 50 (1989): 131–34; Casullo, "The Spatial Structure of Perceptual Space," *Philosophy and Phenomenological Research* 46, (1986): 665–71; and Lorne G. Falkenstein, "Is Perceptual Space Monadic?," *Philosophy and Phenomenological Research* 49 (1989): 709–13. Casullo holds (and Falkenstein denies) that at least some positions in the visual field are correctly described by monadic predicates, such as centrality or sinistrality. James would side with Falkenstein in this debate. Although James thinks we do have direct intuitional access to spatially-extended visual fields, such fields contain no distinct positions until we identify at least three different points standing in identifiable relation to one another.

the horizon. Compared to sensory contrasts we routinely ignore, James argued, the contrast of the sail against the horizon is exceedingly subtle. So there must be some further factor that explains our ability to identify distinct locations in a perceptual field.

The factor James came up with was *selective attention*. Patches of our perceptual fields that have a spatial *quale* can often be broken into smaller, related positions by the subject's selectively *attending* to various portions of the experience.

Above all, James held that our attention is guided by "emotional interests." The relevant contrast with "emotional" is not "rational," but something like "nonpartisan" or "uninvested." Features of our environment to which we are most likely to attend are those that hold some such interest for us:

Emotional interests are the great guides to selective attention. One retinal position, therefore, could hardly be singled out from any other before an interesting object had come to occupy it. It might then share the interest of the object, and be noticed. Again, the local differences, *per se*, may be very slight quantitatively, and require an adventitious sensation, superinduced upon them, to awaken the attention. But after the attention has once been awakened in this way, it may continue to be conscious of the unaided difference; just as a sail on the horizon may be too faint for us to notice until someone's finger placed against the spot has pointed it out to us, but may then remain visible after the finger has been withdrawn. (*EPS* 75)

In this passage, James argued that local contrasts inside a perceptual field may aid the subject in discriminating a particular object. But such differences cannot fully account for our ability to discriminate objects. Thus, James proposed that selective attention, which the mind deploys according to its own "emotional interests," also helps accomplish the task. We *select* parts of our perceptual field to attend to according to what is interesting or important in our environment.

Here we have the rudiments of a mental architecture James would develop and widely deploy in the *Principles*. He conceived of experience, at its most basic level, as a chaotic sensory stream. To be made fully intelligible, distinct objects, positions, and relations must be discriminated via selective attention. The chaotic stream comes equipped with spatial *qualia* (or "feelings of extension"), but not with a clear map of distinct positions or relations.

This theory is striking because it builds a notion of *choice* or *endorsement* into the basic fabric of perception. On James' view, dispassionate observation must be a more sophisticated perceptual achievement than *interested* observation. To break up the "blooming, buzzing confusion" of experience into distinct objects, positions, and relations in the first place, we must *take an interest* in some parts of our environment, and ignore other parts.

Another objection crops up here. It is hard to see how we could have emotional interest in features of our vague experience—our "teeming muchness"—*before* those features have been discriminated. James would presumably respond that objects in the vague stream of consciousness do not require division or discrimination to be *vaguely recognizable*. For example, we can recognize a hand as such in the periphery of our visual field, even though we cannot sharply perceive the hand's constituent visual features. James must hold that this vague form of recognition provides enough information for the mind to take disproportionate interest in some parts of the blooming, buzzing confusion, even before the stream has been subdivided.

## 2.4 Evaluation of James' Position

### 2.4.1 Creative Realism about Spatial Ideas

We have now sketched James' positive account of spatial perception. But does his account really sidestep the problems Green exposed in traditional empiricism?

Recall Green's argument against Hume's account of space perception. Green saddled Hume and traditional empiricism with two core commitments. The first is the reality principle, which states that what is real is to be associated with what we receive passively through sensation. The second is psychological atomism, which is the view that *what* we receive passively through sensation is just a collection of psychological atoms—for Berkeley and Hume, this will be a collection of *minima sensibilia*.<sup>56</sup> Berkeley and Hume held that the perception of space requires grasping relations between *minima sensibilia*, relations that must (Green argued) be *added* by the intellect. So given their commitment to the reality principle, empiricists must regard all spatial ideas as unreal, Green held.

We have seen that James rejected psychological atomism. But might he nevertheless be subject to a similar criticism? His account still required the mind to play an active role in spatial perception—viz., when the mind selectively attends to positions or relations inside the sensory stream. So how can James assert that we ever have real ideas of spatial positions and relations? He appears to run into the same trouble as traditional empiricists.

I shall argue that James, in fact, does sidestep this problem, and he does so by rejecting not just atomism, but the reality principle as well. To see why he is free to discard this second principle—and how this move allows him to sidestep Green's attack—it will be helpful to consider empiricists' original motivation for espousing it.

Let us take the case of Locke, who (at least on Green's story) pioneered the use of this principle. Lockean simple ideas, when they refer to objects or properties outside of us, come from unprocessed sensation.<sup>57</sup> We can be assured that these ideas have a high fidelity to their outward causes because they have been passively stamped on the mind from without, and contain only information about whatever object is responsible for that stamping.<sup>58</sup> In contrast, complex ideas may have been formed by the mind's *adding* information to simple ideas, for example by arranging such ideas in an order in which they were not actually given. Therefore, a complex idea may have a low degree of fidelity to its outward cause, because the idea may contain information actively contributed by the subject's own mind, not by the object or outward cause of the idea.<sup>59</sup>

<sup>56</sup>Strictly speaking, Hume and Berkeley held that only the visual and tactile fields are composed of perceptual atoms. But they also held that these were the only two sensory modalities involved in space perception.

<sup>57</sup>Locke posited two sources of ideas—sensation and reflection. But ideas of external objects come from ideas of sensation.

<sup>58</sup>For example, see *ECHUII*.xxx.2. Green emphasized that Lockean simple ideas have (objective) reality precisely because they are formed passively, by external objects imprinting themselves on our sensory apparatuses, at *INT* §27, 22.

<sup>59</sup>There is great debate about exactly how to construe the relation between an idea of sensation and its outward cause. John Yolton sees Locke as proposing a form of direct realism, in John W. Yolton,

The reality principle is a theoretical tool for excluding such low-fidelity ideas from our conception of reality, and this is why empiricists like Locke espoused it. The principle says that we must only regard as real those ideas we know to have been formed *passively*. In contrast, what we might call ‘active mental processing’ was regarded with suspicion by empiricists.

But James’ stream-based view did not require him to treat mental processing—at least in the case of perceiving space and extension—as involving distortion. Recall that mapping distinct spatial positions and relations is the main aspect of Jamesean space perception that involves mental processing. *But this variety of processing never involves adding information to what is given in sensation.* On the contrary, mapping spatial positions amounts to focusing on a point or relation in the “blooming, buzzing confusion” of raw sensation and temporarily *ignoring* most everything else. So the Jamesean mind actively constructs spatial positions and relations, but those constructs need not be regarded as fictions. Therefore, James is free to reject the reality principle because, on his perceptual model, mental processing does not produce ideas that have a low fidelity to their outward cause.

Notice that James’ model of perception has a curious duality. On one hand, he defended a robust realism about perceived positions and spatial relations. This comes out especially clearly at the end of the *Principles*, where ideas of spatial relations are portrayed as having a high fidelity to their outward causes:

[T]ime- and space-relations . . . are impressed from without—for two outer things at least the evolutionary psychologist must believe to resemble our thoughts of them, these are the time and space in which the objects lie. *The time- and space- relations between things do stamp copies of themselves within.* Things juxtaposed in space impress us, and continue to be thought, in the relation in which they exist there. Things sequent in time, ditto. (PP 1229; italics original)

Our sensations are “stamped” on the mind from without, and stamped in a way that preserves the spatial and temporal order of the outward causes of those sensations. Thus even at the most basic level, the sensory stream—chaotic though it may be—is given with a spatial and temporal order.

But on the other hand, James also argued that the mind plays an active role in constructing perceptual reality. In his “Are We Automata?,”<sup>60</sup> an essay that was published the same month as “The Spatial Quale,” James likened the work an interested mind performs on its own sensory data to the work of a sculptor who chisels away at stone. The text containing the metaphor was polished and reprinted in the *Principles*:

The highest and most elaborated mental products are filtered from the data chosen by the faculty next beneath, out of the mass offered by the faculty below that, which

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*Perceptual Acquaintance: From Descartes to Reid* (Minneapolis: University of Minnesota Press, 1984), 61–68, 88–113. Michael Ayers rejects this reading, in *Locke*, 56–59, maintaining that Lockean ideas are images or “intentional objects” in the mind. These images represent whatever property is generally responsible for causing ideas of their type—Ayers thus calls Lockean ideas “natural signs” of their causes; see *ibid.*, 38–39, 44–51, 60–66. Siding with Ayers on this issue is Vere Chappell, “Locke’s Theory of Ideas,” in *Cambridge Companion to Locke*, ed. Vere Chappell (New York: Cambridge University Press, 1994), 28, 32–35. Green saw Lockean ideas much as Ayers and Chappell now do (*INT* §20, 15), so this is the interpretation my own discussion presupposes.

<sup>60</sup>William James, “Are We Automata?,” *Mind* 4 (1879): 1–22, at 13–14; reprinted at *EPS* 51–52.

mass in turn was sifted from a still larger amount of yet simpler material, and so on. The mind, in short, works on the data it receives very much as a sculptor works on his block of stone. In a sense the statue stood there from eternity. But there were a thousand different ones beside it, and the sculptor alone is to thank for having extricated this one from the rest. Just so the world of each of us, howsoever different our several views of it may be, all lay embedded in the primordial chaos of sensations, which gave the mere *matter* to the thought of all of us indifferently. . . . [T]he world *we* feel and live in will be that which our ancestors and we, by slowly cumulative strokes of choice, have extricated out of this, like sculptors, by simply rejecting certain portions of the given stuff. Other sculptors, other statues from the same stone! Other minds, other worlds from the same monotonous and inexpressive chaos! My world is but one in a million alike embedded, alike real to those who may abstract them. How different must be the worlds in the consciousness of ant, cuttle-fish, or crab! (*PP* 277)

Jamesian mental processing amounts to chiseling away, like a sculptor, what is uninteresting or useless in sensation. James applied the same metaphor to spatial perception.<sup>61</sup> When the mind actively attends to a distinct position or spatial relation in the perceptual field, this involves *discarding* other information not relevant or interesting to the organism.

Traditional empiricists might have likened the processing of sensory data to a child who constructs a tower by arranging building blocks. The tower's structure was not latent in the collection of blocks. It took a child's creative imagination to design and build the tower. In contrast, the sculpture's structure was, in a more compelling sense, latent in the stone before anyone took up a chisel. The sculpture contains no relations between parts of the stone that were not extant in the original block. The sculptor only chiseled away shards he did not find useful. This is why James is free to reject the reality principle—the mind does not fortify, amplify, or otherwise distort “the data it receives” when it actively processes (chisels away at) raw sensation.

#### 2.4.2 *James and Metaphysical Ideas*

I have just argued that James was free to reject not just psychological atomism, but the reality principle as well. Even though he held that the perception of positions and spatial relations had to be produced by active mental processing, he could regard such processing as non-distorting.

But the perceptive reader will wonder whether James is off the hook, yet. For Hume did not *claim* that perceptions of spatial relations were always products of active mental processing. He held that *minima sensibilia* are given with a spatial order. We are able to isolate ideas of spatial relations by using distinctions of reason to focus on this order. A key move in Green's argument was to show that Hume could not consistently claim that raw sensation consists of *ordered* sets of *sensibilia*.

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<sup>61</sup>This passage does not explicitly mention spatial perception. But see nearby passages, both in “Are We Automata?” and in reproduced portions of that article in the *Principles*. For example, at *PP* 273, James wrote: “Dots dispersed on a surface are perceived in rows and groups. Lines separate into diverse figures. The ubiquity of the distinctions, *this* and *that*, *here* and *there*, *now* and *then*, in our minds is the result of our laying the same selective emphasis on parts of place and time.” Clearly, James intended that we do not just selectively emphasize different *temporal* parts of the stream (e.g., we hear the clock as “tick-tóck, tick-tóck, tick-tóck” [*PP* 273]). We also selectively emphasize the *spatial* parts as well. See also (*EPS* 48–49).

Now James may reject atomism and the reality principle, but he cannot get ideas of positions or spatial relations without the crucial assumption that raw sensation is given with a spatial and temporal order. If Green showed this assumption to be impossible for Hume to accept without contradiction, why is the assumption any less troublesome for James?

The answer highlights how profoundly James transformed the empiricist project in the course of defending it. Hume's austere conception of what is given in sensation—collections of *minima sensibilia*, and *nothing else*—was driven by his goal of excluding metaphysical ideas from our conception of reality. Because metaphysical ideas like those of substance, causality, and necessary connections in nature could not have been copied from any set of *minima sensibilia*, Hume argued, they could justly be regarded as unreal. Green responded that Hume's conception of sensation was so austere that it in fact also ruled out real ideas of spatial relations. But James was not in the business of showing that metaphysical ideas are all unreal,<sup>62</sup> so his conception of sensation did not have to be nearly as austere as Hume's.

#### 2.4.3 *The Heart of Empiricism*

Of course, one might now wonder what James' larger project was, and whether he was entitled to see himself as heir to the empiricist tradition at all. The question is all the more pressing given that James rejected two core commitments of Locke, Berkeley, and Hume: atomism and the reality principle. What, after all this, does James actually *preserve* from traditional empiricism? It is to this question I now turn.

James argued that certain empiricists (he named J. S. Mill, Bain, and Spencer) had misunderstood the essence of their own tradition. To count as a genuine empiricist, James claimed, it was necessary and sufficient to deny that one can gain synthetic *a priori* knowledge in Kant's sense (*EPS* 82).<sup>63</sup> I now explain why James might have seen this as the heart of empiricism. I will conclude by showing that by his own standard, James indeed counts as an empiricist—his view does not permit synthetic *a priori* judgments (at least about spatial relations).

<sup>62</sup>Indeed, at *PP* 1229, around the passage just excerpted, James suggests that concepts of substance and causality are "elementary mental categories." But they are not formed from impressions of the outer world. They are instead concepts that are dreamed up, so to speak, by chance. They are then preserved in human mental life because they prove useful in helping organisms successfully navigate their environments. James shows no inclination to treat such concepts as unreal.

<sup>63</sup>This is a view James would come to share with some logical positivists, who came to wrestle (as did James, to a lesser extent—more on this below) with the implications of the new non-Euclidean geometries for Kant's conception of synthetic *a priori* knowledge. See Michael Friedman, *Kant and the Exact Sciences* (Cambridge, MA: Harvard University Press, 1992), xii–xiii; Friedman, *Reconsidering Logical Positivism* (Cambridge: Cambridge University Press, 1999), xv, 2. Further evidence that James saw the question of synthetic *a priori* knowledge as the crucial issue between idealists and empiricists can be found in James' notebook at Houghton Library, Harvard University, bMS Am 1092.9 (4411). This notebook is reproduced at *EPS* 380–82, and appears to have been written around the time James was working on "The Spatial Quale." James seems to have been thinking about synthetic *a priori* knowledge when he read Hume's *Treatise*. His copy is preserved at Houghton Library, WJ 540.54, and in the margins of p. 343, he wrote, "no 'a priori synthet. judgments!'" (he had Green's 1874 edition—see *THN* I.ii.3, 36, for the relevant passage).

Recall that Kant divided judgments into those that are analytic and those that are synthetic. Analytic judgments have predicates that are wholly contained in their subjects, and so are always *a priori*. Synthetic judgments are those whose predicates *add* information not contained in the subject. A chief burden of Kant's first *Critique* was to show that in addition to synthetic *a posteriori* judgments, there are also synthetic *a priori* judgments.

Paradigmatically, the axioms of Euclidean geometry were supposed to be synthetic *a priori*. On the one hand, the axioms were supposed to be *a priori* and necessary (*CPR*A24, B39). This is because it was impossible even to conceive of a representation of space that violated Euclidean axioms, according to Kant (*CPR*A24).<sup>64</sup> But on the other hand, the axioms went beyond analytic truths—they were not statements true in virtue of their predicates being contained in their subjects (*CPR*B16–17). The axioms were thought to be synthetic statements that describe the (necessary) structure of phenomenal space.

For Kant, the allegedly synthetic *a priori* character of Euclid's axioms could only be accounted for by supposing that space is a pure form of outer intuition.<sup>65</sup> This is an example of a transcendental exposition, in which we establish one proposition to be necessary by showing it to be a precondition for some synthetic *a priori* truth already in hand.

Although neo-Kantians like Green rejected major portions of Kant's metaphysics (in particular, they rejected the notion of a noumenal world standing "behind" the phenomenal; e.g., *GWR* 2:9), they retained Kant's idea that Euclid's axioms were synthetic *a priori* in the sense that the axioms were held to describe conditions of any possible outer experience (e.g., *GWR* 2:246, 248).<sup>66</sup> In other words, what explains the necessity of Euclid's axioms was to be that these axioms described constraints on any possible perception of space or extension. For neo-Kantians like Green, space was still to be a pure form of intuition, a fact to be gleaned only by transcendental exposition, not empirical investigation.

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<sup>64</sup>I am simplifying Kant's argument. For a more thorough discussion of the *a priori*, necessary character of the Euclidean axioms, see Hatfield, *The Natural and the Normative*, esp. 90–94.

<sup>65</sup>The argument went roughly like this: The judgment *a straight line between two points is the shortest* is necessary. But the necessary connection between the subject and predicate cannot owe to the meaning of words, because the notion of *shortest* is not contained in the notion of *straight line between two points*. Some "pure" or *a priori* element had to be added for these concepts to get glued together with the force of necessity (*CPR*B16). The element had to be pure because a proposition that can only be conceived as necessary, such as this geometric judgment, must be *a priori* (*CPR*B3). Kant argued that since all objects we perceive through the "outer sense" necessarily conform to basic Euclidean judgments like that given by the sentence under consideration, these judgments must describe the pure, necessary form of all outer intuition. Thus, *space* turns out to be nothing but this pure form of outer intuition—in other words, space is the "form" the mind imposes on the "matter" of outer sense. This argument exemplifies Kant's notion of a transcendental exposition because it is *only* insofar as one supposes that space is a pure form of outer intuition that one can account for the synthetic *a priori* character of geometry (*CPR*B40–41).

<sup>66</sup>I am papering over some complications here because Green denied that there is a sharp boundary between analytic and synthetic propositions (*GWR* 2:5–6). However, Green explicitly accepted the notion that the axioms are synthetic *a priori* in the sense relevant to my discussion. Green says that "Kant was quite right in saying that the judgment 'a straight line is the shortest way between two points' is synthetic and *a priori*, in the sense that" the statement is non-trivial, non-empirical, and "valid for all possible objects of experience" (*GWR* 2:246).



That is the significance of synthetic *a priori* knowledge to James. Those who hold that there is synthetic *a priori* knowledge of space (via Euclidean geometry) cannot be satisfied with an empirical account of the mind—they will insist that the alleged synthetic *a priori* character of such knowledge cannot be accounted for without postulating that experience has a *necessary* structure. And because this structure is necessary, its nature and existence can only be explained through *a priori*, transcendental argument.

This is why James held that the core of empiricism was the rejection of synthetic *a priori* knowledge, I propose. If experience has a *necessary* structure, that structure could only be gleaned *a priori*, not through robust empirical investigations. And for James, the real spirit of the empiricist tradition was the conviction that the mind is an appropriate object of empirical, scientific investigation.<sup>67</sup>

#### 2.4.4 James as Empiricist

So James' ultimate goal in "The Spatial Quale" was to provide a consistent account of the mind that did not concede space to be a *necessary* form of intuition—that did not concede that the mind necessarily imposes a Euclidean structure onto perceptual experience. If spatial perception comes equipped with a necessary form, this would open the door to the Kantian demand for a metaphysical (read: *a priori*) explanation of such necessity. How, if at all, did he accomplish this feat?

James' stream-of-thought model of perception is incompatible with the existence of necessary and synthetic geometric principles that govern spatial perception. This is because the stream can be spatially parsed in *any way that is of interest*, on James' view. Suppose it were discovered that all humans employ some particular spatial geometry (perhaps the geometry described by Euclid's axioms) to map perceptual space. James would deny that we have any reason to think this geometry is *necessary* for mapping perceptual space, because as our interests change, we could come to use a different geometry. Our interests may change both over a phylogenetic (trans-generational) and an ontogenetic (developmental) scale. As our interests change, the systems of relations we parse in our larger stream of consciousness may change as well, for James. If this is right, then no particular geometry for mapping perceptual space can be assumed to be necessary for having a spatial experience.<sup>68</sup> In turn, no principles describing such a geometry could be synthetic and *a priori* in Kant's sense.

<sup>67</sup>For another account that emphasizes James' own view of himself—especially early on, while he was pursuing work in psychology—as heir to the empiricist tradition, see Ignas K. Skrupskelis, "Introduction," in *Manuscript Lectures*, ed. Frederick H. Burkhardt, Fredson Bowers, and Ignas K. Skrupskelis (Cambridge, MA: Harvard University Press, 1988), xvii–lxiii, at xlvi.

<sup>68</sup>A more recent book that explores some distinctly Jamesian ideas about space perception is Patrick A. Heelan, *Space-Perception and the Philosophy of Science* (Berkeley: University of California Press, 1983). Heelan argues that the geometry of visual space may vary depending on items of interest in our environment. Heelan writes that "visual space can take on any one of a family of geometries depending on the hermeneutical context of foreground and background" (53). He sounds very much like James when he goes on to write that "what is foreground and background depends from moment to moment on interest and attention, and with each change the parameters of visual space may also change" (75). Heelan provides both a mathematical model and experimental support for a view very much like James', it seems to me. James receives only the briefest mention, though (176).

Note that James' burden in "The Spatial Quale" was not to show it to be *impossible* that humans can have synthetic *a priori* knowledge. The challenge from Green was merely to come up with a consistent account of spatial perception that did not support synthetic *a priori* knowledge of space. After all, Green did not work out his own constructive proof that space is a necessary form of intuition—at least not in much detail. Instead, his argument for idealism (in the "Introduction") had the form of a *reductio ad absurdum*. Indeed, when Green finally developed his own Kantian account of space perception, his argument was that such a theory was established purely by Hume's failure<sup>69</sup>—a failure Green took himself to have demonstrated in the "Introduction," presumably. Thus, if James could provide a consistent, empirical account of spatial perception that did not countenance synthetic *a priori* knowledge of space, he could avoid Green's argument for idealism.

True, in a sense there was a second route to establishing idealism, for Green—he also approvingly recounted *Kant's* constructive argument for an idealist account of space perception, buried though this recounting was in his relatively obscure *Lectures on Logic*. According to this argument, one can only explain the alleged synthetic *a priori* character of Euclidean geometry by treating space as a necessary form of intuition, as we have seen. Did not this argument place a stronger burden on James than simply to develop a consistent, empirical account of space perception?

Here James had a neat response: Helmholtz's development of a consistent *non-Euclidean* geometry shows that Euclid's axioms cannot be synthetic *a priori*, after all (*EPS* 82). The axioms cannot be synthetic *a priori* because they cannot be necessary—Helmholtz's work shows that we *can* conceive of non-Euclidean space. Indeed, we can even demonstrate that the axioms describing this new space are themselves consistent.

Thus, after quoting Helmholtz's claim that one can still hold that space is a form of intuition in Kant's sense, even if one rejects the necessity of Euclid's axioms, James objected:

Every sensationalist empiricist must admit a wealth of native forms of sensibility. The important question is: Do they, or do they not, yield us *a priori propositions*, synthetic judgments? If our "sensation" space does this, we are still Kantians in a deeper sense by far than if we merely call the spatial *quale* a form of *Anschauung* [intuition],<sup>70</sup> rather than an *Empfindung* [sensation]. But if the new geometry of Helmholtz and others has upset the necessity of our axioms (and this appears to be the case . . .), then the Kantian doctrine seems literally left without a leg to stand upon. (*EPS* 82)

Even if the principles that turn out to describe phenomenal space are not necessary, our general capacity to perceive space (using *some* geometry or other) might still be native and necessary, Helmholtz had argued. In this sense, Helmholtz maintained that space was still a necessary form of pure intuition. But James coun-

<sup>69</sup>"So far Kant's doctrine [of space perception] seems irrefragable. It is the logical result of the failure of Hume's attempt to treat space as an aggregate of feelings" (*GWR* 2:242). The sense of 'logic' here is Hegelian—Green often treated Kant as the necessary next stage, after Hume, in the dialectic of history—e.g., see *INT* §§1–5.

<sup>70</sup>James commonly uses '*Anschauung*' in its Kantian sense, as a term of art conventionally translated as 'intuition'.

tered that this misidentifies the essence of Kantian accounts of space,<sup>71</sup> which was not nativism—not the view that we have a native ability to perceive the property of spatial extension. Every empiricist must admit a wealth of native capacities. Rather, the essence of Kantian accounts was the claim that there is only one possible geometry for mapping our perceptual field, a geometry that supports *a priori*, necessary judgments about the structure of space. Helmholtz's own proof that there are consistent, non-Euclidean geometries undermines this claim by showing that there are multiple sets of geometric axioms that are mutually incompatible, yet internally and demonstrably consistent (and to that extent at least, conceivable). So Euclid's axioms cannot be synthetic *a priori*, and Kantians cannot use a transcendental argument to show that space is a pure form of intuition.

In short, James took Helmholtz's metageometric proofs to have removed the need for an outright refutation of the possibility of synthetic *a priori* knowledge of spatial relations. Instead, the late-Victorian empiricist only had to develop a consistent, empirical account of spatial perception that did not *countenance* such knowledge. James took his own stream-of-consciousness model of perception to provide just such an account.

### 3. CONCLUSION

I have argued that James successfully defended empiricism from Green's influential attacks. I began by examining Hume's austere model of perception. Hume used the model to argue that metaphysical ideas should be counted as unreal because they cannot have been copied from any sensory impressions passively stamped on the mind. Green contended that this model was in fact so austere it entailed an absurdity, that even ideas of spatial relations must be counted as unreal.

James' response involved rejecting two of Hume's (and traditional empiricism's) central commitments: that there are psychological atoms, and that reality should be associated with what the mind passively registers in sensation. On James' model, sensation is given in a continuous stream. Subjects identify distinct positions and spatial relations inside the stream by *ignoring* information that is unimportant, much like a sculptor produces a statue by chiseling away at a block of stone.

One assumption that proved troublesome for Hume was that sensation is given with a spatial and temporal order. But I argued that James was able to retain this assumption because he did not use his account of sensation as a tool for banishing metaphysical ideas.

One might think Hume's anti-metaphysical stance is essential to traditional empiricism. But James argued that the heart of empiricism involved neither banishing all metaphysical ideas nor endorsing the two central commitments mentioned above. Instead, James claimed that the heart of the empiricist tradi-

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<sup>71</sup>For evidence that James saw Helmholtz as an ally of Green, see above, note 35. Helmholtz called his view of spatial perception 'empirism', of course, but he was also a great proponent of the "back to Kant" movement; see Hatfield, *Natural and Normative*, 109–10. In "The Spatial Quale," James seems confused about Helmholtz's language: "The word 'empiricist' [*sic*] in his [Helmholtz's] optics means just the opposite of its ordinary signification" (*EPS* 80). He thinks the "ordinary signification" is philosophical empiricism of the sort Hume defended.

tion was its commitment to study the mind scientifically rather than through *a priori* speculation.

This project was not viable if, as Green argued, our knowledge of Euclidean geometry is synthetic *a priori*. If geometric knowledge is synthetic *a priori*, then space must be a necessary form of intuition, and a full explanation of spatial perception requires *a priori*, transcendental reflection. So if he was to defend empiricism, James' burden was to develop a consistent mental model that evaded Green's *reductio*, and that did not countenance synthetic *a priori* knowledge of spatial relations.

I argued that James' stream-of-consciousness model met both these criteria. There can be no substantive, necessary constraints on Jamesean spatial perception because subjects only learn to map distinct positions and spatial relations by taking disproportionate *interest* in some portions of the stream of thought. Since these interests may change over time, the geometry we employ in spatially mapping the stream of consciousness may change as well. So whether we now employ Euclidean geometry to map spatial relations turns out to be a contingent matter of fact that cannot be ascertained through *a priori* argument. Empirical investigation is required.

Thus, James claimed to be the real descendent of British empiricism on grounds that his anti-atomistic model of perception fortified what Green had perhaps most wanted to demolish—the prospect of using strictly empirical, scientific methods in the study of mind.<sup>72</sup>

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