Columbia University Lectures of 1904

Historical Context

Josiah Royce (1855-1916) delivered a series of five lectures to Columbia University on 1, 2, 8, 9, and 15 February 1904. Frederick J.E. Woodridge wrote to Royce in the previous year with an offer to deliver ten lectures on metaphysics, but eventually the two agreed on five lectures concerning the relation of logic to metaphysics.[1] The revision of the topic more closely reflects Royce's studies at the time, and doubtlessly relates to his preparations for the advanced course in logic offered at Harvard later that year. The purpose of the lectures was to introduce recent discoveries in mathematical logic to his audience, and to illustrate the fundamental importance of logic to philosophical inquiry, especially to metaphysical problems. Royce felt, in an anticipation of the mathematization of philosophy in the twentieth century, that philosophy ought to embrace a rigorously logical outlook, and consequently become more technical and thus more specialized; but, Royce emphasized, philosophy ought not lose sight of the social applications of philosophy to life, nor of the fundamental issues in metaphysics. Hence, the lectures represent a continued effort by Royce to reconcile the rigor of mathematical logic with the grandiosity of speculative metaphysics to develop a consistent philosophy of life.

The lectures themselves are a product of Royce's return to a systematic study of mathematical logic after the publication of the first series of *The World and the Individual* in 1899. The impetus for such a study was Royce's attendance in the year prior to Peirce's 1898 lecture series, "Reasoning and the Logic of Things," at Cambridge, and their subsequent correspondence

[1] Royce, Josiah. *The Basic Letters of Josiah Royce*. Ed. John Clendenning. Chicago & London: University of Chicago Press, 1970: 456-9. Clendenning, John. *The Life and Thought of Josiah Royce*. Nashville: Vanderbilt University Press. 1991: 284.

course on logic.[2] But if Peirce was the impetus, his theories were not integral to Royce's research program until 1912. As the Supplementary Essay of *The World and the Individual* indicates, the logical theories of the mathematician Alfred Bray Kempe and the speculative metaphysics of the absolute idealist F.H. Bradley were the primary influences in Royce's thinking at this time.[3] What Royce sought to accomplish in the Supplementary Essay was a solution to the problem of the actual infinite in Bradley's *Appearance and Reality* with the formal tools of Kempe's logic. The topic of the Columbia lectures, the relation of logic to metaphysics, is therefore an extension of Royce's efforts in the Supplementary Essay, albeit in a different direction, namely, toward an alternative method to derive the descriptive categories.

First, and most briefly, what was the problem of the actual infinite that Royce sought to solve in that Supplementary Essay with Kempe's logic? Bradley, in *Appearance and Reality*, despite offering a defense of absolute idealism, ultimately reaches a skeptical conclusion regarding any attempt to reconcile the multiplicity of finite things with the absolute, even though we have sufficient reasons to believe in absolute reality. The problem, which is logical in nature, emerges when Bradley tries to conceptualize how *one* thing unites with *many* qualities. After dismissing an underlying substratum as incoherent, — since we would have to posit an incognizable bare particular, — and things as collections of qualities as unhelpful, — since we still would have to explain the relation of the thing to its qualities, — Bradley shifts his attention to the relations among various terms which signify thing-like qualities.[4] Accordingly, Bradley discovers a reciprocity between terms and relations: We need terms to ground the existence of relations but we also need

[2] Kuklick, Bruce. *Josiah Royce: An Intellectual Biography*. New York: Bobbs-Merrill Company, 1972: 137.
[3] For an extended discussion on Royce's relation to Bradley and Kempe, see Clendenning 1991: 238-250. On the relation of mathematical logic and metaphysics in Royce's philosophy at this time, see Kucklick 1972: 137-153.
[4] Bradley, F.H. *Appearance and Reality*. London: George Allen & Unwin LTD. 1916: 19-24. On Bradley's view of relations and terms, see 25-34; and for the definitive statement of Bradley's absolute idealism, see 144-161.

relations to determine the nature of the terms related. Except now, the issue resurfaces at a different level of analysis: For some term t_1 needs to found a relation R and another t_2 needs to determine the nature of the former with respect to that relation; and yet, if we are to regard relations as real, then R needs to become the founding term t_3 in a subsequent relation R_1 to another t_4 which determines the nature of the former with respect to that relation, and so on, *ad infinitum*. Bradley's solution to the infinite regress is to admit the reality of relations and their terms only as aspects of an absolute reality we cannot sufficiently comprehend without self-contradiction. For we would have to conceive of the absolute as an actual infinite enumeration of terms and their relations, which would imply that no term is ever actually related, but ultimately groundless; or simply said, that all such attempts to conceive the absolute would reinstate the infinite regress that Bradley wants to avoid.

Royce probably saw Bradley's answer as a reappearance of the Schellingian 'night in which all cows are black,' which Hegel derisively spoke of in the *Phenomenology*, because the putative solution forgoes any attempt to comprehend the relation among the multiplicity of finite things with the absolute life in which they move and have their being. Consequently, Royce sought an alternative solution that utilizes Kempe's logic. Building upon the concepts of *The Spirit of Modern Philosophy*, Royce notes in the Supplementary Essay that the world of appreciation — that is, of the absolute — is governed by the serial order defined by *nextness*, while the world of description — that is, of finite things — is defined by *betweenness*. According to Kempe, whenever we want to conceive of how any pair is related, we discriminate between the related terms and the mediating term that lies between them, which implies that the definable properties of any pair of things will be a system of continuous points. Hence, for any pair *a* and *b*, we can discriminate between *a* and *b* and discover some middle term that relates *a* to *b* and also expresses the common nature that binds them together. We can assert, for example, that *a* is similar to *b* in terms of *m*, but in asserting that

similarity, we also assert that there is some difference which warrants their being expressed by separate terms. Of course, we can continue this process indefinitely, and discover a middle term between *a* and *m*, as well as between *m* and *b*, and so on, *ad infinitum*. But, *pace* Bradley, the relation is not inconceivable, since the possibility to discriminate among elements by correlations of similarity and difference continuously reveals more precise conceptualizations about the terms we discriminate between; which simultaneously reveals how the multiplicity of things are relatable as one and how the one is differentiable into many.

What the Kempean logic affords Royce is a technical language to illustrate how the multiplicity of things are describable as different only within a context of similarities which binds them together into various groups, and those groups into the whole, for the describer to discriminate between. The whole in which all things are describable as similar and different is, of course, the absolute. Royce's endeavor, which began with *The Spirit of Modern Philosophy* and received systematic treatment in *The World and the Individual*, is to explain how this whole — which, in the world of appreciation, is seen as a 'self-representative system' — manifests as the world of description wherein the describer discriminates the whole into groups and groups into things on the basis of categories such as similarity and difference. But similarity and difference could not suffice to explain how things form groups and how groups form the whole of the world of appreciation. Besides similarity and difference, Royce endeavors to discover general types, or concepts necessary to compose spatial and temporal sequences, along with the laws that govern the composition of classes that bind things into specific groupings. Such concepts, or forms, Royce describes as categories; and the principal aim of this period, after the publication of *The World and the Individual*, is to construct a deduction of the categories. In this regard, the Columbia Lectures appear experimental: For the primary concern of the lecture series is to outline an alternative to

previous attempts at such a deduction with a novel methodology which Royce designates as the science of the comparative morphology of concepts.

The Manuscript

The manuscript is in Harvard Archives Royce Papers (HARP) Box 50 and 74. The two boxes together have all five lectures between them, roughly over half in handwritten manuscript and the remaining in typescript pages. The original typescript ran consecutively 1 through 70, but Royce divided and reorganized them into the final third of the second lecture and the entirety of lectures three and four. Handwritten alterations were made to the page-numbers of the typescript to reflect the reorganization of the content, such that pages 1-20 became 41-60 in lecture two, while pages 21-42 became the third lecture and 43-70 became the fourth. The seventy pages of typescript are thus redistributed throughout the middle of the lecture series, where the remaining lectures — the first, two-thirds of the second, and the fifth — are handwritten manuscript pages.[5]

The lecture series is prefaced with a program outlining each individual lecture. The program itself is a three page handwritten manuscript, the first collection in HARP Box 74. Each individual lecture in the program is assigned a title, and is divided by topic and subtopic, relating the major themes which the lecture will address. Following the program in Box 74 is the first lecture. The first lecture serves as the introduction for the entire series, and is a sixty-eight page handwritten manuscript — with 68-69 written on a single page — divided into three sections; while page 3 is slightly torn, and there is some text missing, on the upper left side. The second lecture is a sixty page text, where pages 1-40 are the handwritten manuscript pages found in Box 74 and 41-60 are the typescript pages found in Box 50, and divided into eight sections. The third lecture is incomplete, beginning with the last two typescript pages found in Box 50, numbered 21 and 22,

[5] All information on the manuscript is found in the Oppenheim Comprehensive Index, entry 252.

and a page with ‘Lecture 3’ typed center; then the lecture appears to continue with typescript pages 25-42 found in Box 74, but pages 23 and 24 are missing, that follows the handwritten manuscript numbered page 40. The remaining manuscript documents in Box 74 are a note typed with the title ‘Lecture IV, on one side, while on the other is a list of topics under the heading ‘Quantity,’ the repaginated typescript pages 42- 70 that comprise the fourth lecture, and the fifth lecture. The fifth lecture is a handwritten manuscript with fifty-eight heavily edited pages, and the final document in Box 74.

The Columbia Lectures 1904

Some Characteristics of the Thinking-Process is the official title of the Columbia Lectures, and the first lecture mainly serves as an introduction to a prospective science, which examines the process of scientific thinking by analyzing concepts. Accordingly, in the program, Royce titles the first lecture *The Comparative Study of the Concepts of Science*. The title signifies both the method and the content proper to that prospective science, which Royce will designate the science of the comparative morphology of concepts. There are, as the program indicates, two steps with respect to the method of comparative morphology. First, there is an empirical survey of the useful and widely applicable concepts in science. Second, there follows a comparative analysis of such concepts as products of scientific thinking. From the survey, an induction of a list of concepts fundamental to science is inferred, which Royce designates as categories. From the logical analysis of these categories, a second induction is inferred concerning a metaphysical conclusion about the relation between thought and reality; that is, whether the categories derive their importance from the thinking-process or from external reality.

Comparative morphology is, according to Royce, an empirical science; which is why it is reasonable to describe the method of deriving the categories as inductive. For the sample is taken

from “the experiences […] accumulated in the course of scientific inquiry regarding what types of conception most naturally result” (1904: MS 13). From that sample of concepts, Royce thus infers a list of categories empirically known as fundamental to science. But how could Royce ever inductively infer a metaphysical conclusion from a logical analysis of these categories? The idea is, if there is a list of categories, this must be explained by *something* that determines scientists to think in terms of these rather than others. Plausibly, the categories “must borrow their importance from something that lies very deep in the nature of thought [...or from] something in the nature of things” (1904: MS 14). Given these categories will have the same structure in whichever science they are employed, from a logical analysis of how scientists form these categories, we ought to be able to infer whether human intelligence compels us, or that external reality constrains us, to think with these categories rather than others — which is why they are so useful and applicable.

Royce concludes the first lecture with a comparative analysis of the conceptual formation of certain concepts fundamental to science — number, statistics, and rhythmic processes — and discovers that each involves the concept of a class containing elements according to lawful relations. Accordingly, in the program, Royce titles the second lecture *The General Survey of certain concepts that are of fundamental importance in science*, and lists the topics as follows: (1) Classes and the process of classification, (2) relations and their types, and (3) ordinal concepts and ordered series. The previous lecture found that the process of classification antecedently depends on the capacity of the describer to discriminate among elements, or “whatever you may count as one, or name by a single term, or […] is dwelt upon for the moment, as a single fact” (1904: MS 65). Given the continuity of awareness, “fixing attention upon a single new element is always only a beginning of a further thinking-process,” which ends only when “your new element gets its place in some sort of system” (1904: MS 65-6). As the topics indicate, the systematic arrangement of

elements into classes will depend upon the relations discriminable among those elements; and, besides being responsible for the derivation of ordinal concepts, we ought to expect the ordered series to serve an important role in systematically arranging elements in the process of classification.

As an entry-point to an analysis of the process of classification, Royce discusses the conceptual formation of classes and the discrimination of relations: "To classify facts is to arrange them in various [and large] ideal collections" but "when we mention the relations of facts, we usually first think of taking facts in small groups, and then [discriminate] relations amongst the facts" (1904: MS 6-7). There is an interdependence between facts and relations in classification, the facts being the elements bound by relations in classes: "Where we have to do with classes of objects, we have to do with relations […and so with] relations, we are inevitably led to form classes" (1904: MS 9). Consider any class. In order to form the class there must minimally be some set of elements and the relation of membership defining those elements as belonging to some class rather than another; and, where there is any membership-relation, there is a class of certain elements, and vice-versa, which illustrates the reciprocity of elements and relations in the process of classification.

Since anything discriminable can serve as an element, classes are conceivable as elements subject to further classification, which allows a potentially infinite variability in classification. The same type of discrimination applies to relation: "Any relation may be taken apart from the terms which it relates, and may be treated as an element in a class of relations […] brought into relations with other relations, and so we may proceed indefinitely" (1904: MS 22-23). Even if classification may proceed indefinitely, the purposes of thought, which are finite in number, delimit the classificatory process. For example, we are either compelled by the nature of thinking or constrained by external reality to classify elements according to serially ordered relations. We tend

to think of one element as necessarily following some distinct element, and thereby derive the concept of a one-dimensional series. An exemplification of the one-dimensional series is the time-series, within which we organize our affairs and define our purposes. Furthermore, once we classify a set of elements bound by a one-dimensional serial relation, the ordinal concepts associated with the whole-number series are derivable; then, we can construct multi-dimensional series out of simpler sequences for more complex classification schemes.

A nascent system is beginning to emerge from Royce's analysis of the process of classification. For now, we can compare distinct sets of one-dimensional series and discriminate between their members to describe certain definable properties. We can, for example, compare distinct series and discriminate a correspondence among their elements, such that "object a, in series s, correspond to object b, in the series t" (1904: MS 36). Royce refers to such an operation as *taking a level*, and is responsible for discriminating equivalence-relations among elements. Whenever, for example, we discriminate that some element in a series is contiguous with another element in a different series, we determine thereby that those elements exist on the same level of coexistence in space. If we discover that those elements are not contemporaneous with one another, and that one actually succeeds the other, then the pair of elements are bound together in a one-dimensional series of time. Furthermore, with the time-series and the levels of space, the conceptualization of change becomes possible. We can, for example, conceive a body in motion by occupying different spatial positions insofar as that body coexists with others across a one-dimensional series of time. Such instances of change are exemplifications of what Royce refers to as transformations.

Royce's concept of transformation generalizes physical change, such as momentum, to include any type of change from an earlier to a later stage. Thus, momentum qualifies as a transformation because there is a change from the body's earlier spatial and temporal position to a

different spatial and temporal position at a later stage. There are clearly other instances of physical transformations. The organic growth of a flower from the earliest stages of the seed to the later budding forth of the petals, and the intermediate stages between, constitutes a physical transformation. As does the maturation of an organism from the earliest stages of its inception to the later stages of decay and ultimately death. Given the generality of Royce's definition, ideal changes are also a species of transformation. Whenever the mind attempts to conceptualize some phenomena, there is an early stage where there is a confusing mass of facts in need of explanation; and a later stage, where the thinking person willfully substitutes an ideal form which simplifies the facts in a way agreeable to understanding. Such is the case, for example, whenever a set of mathematical idealities replace some set of confusing facts, for example momentum, that stand in a similarity-relation to the facts abstracted from. More importantly, such is what happens throughout the entire process of classification.

The second lecture concludes with, and the third lecture continues, a detailed analysis of relation. Specifically, Royce analyzes the fundamental types of dyadic relation, postponing the analysis of triadicity. A relation is a "characteristic that belongs to an object […] as a member of a group," and thus, "a connection that holds" for some set of elements (1904: MS 50-51). Royce seems to suggest that relations are *irreducible* to the elements they relate; so, for any dyadic relation, there is at least a pair of elements, x and y, and the relation R existing over and above x and y as the characteristic responsible for their connection. Royce tries to discriminate the various species of relation by discovering their differences. Observing a set of elements, for example, the relation of *greater than* is discriminable; and, the difference that distinguishes it is that the relation is asymmetrical. Namely, if p is greater than q, then the converse does not hold. Whereas, if p and q were interchangeable, none greater than the other, we would know they are equivalent, and thus,

on the same level. Given equivalence is a symmetrical relation, we can derive symmetry from the concept of a level. Suppose the elements *p*, *q*, and *r* from three distinct series are equivalent, then we can say, if *p* equals *q*, and *q* equals *r*, then *p* equals *r*. From three or more sets of series on the same level, therefore, transitivity is discriminable; and, the negation of transitivity results in the concept of an intransitive relation. Royce then redefines the fundamental concepts found thus far according to their characteristic relation. The level is defined by symmetrical transitive relations. The ordered series is defined by asymmetrical transitive relations, and transformations are either symmetrical or asymmetrical transitive relations. The remainder of the lecture endeavors to identify instances of these concepts so defined in the physical and ideal worlds, explaining their pragmatic significance, and proving that these ideal forms find exemplars in the physical world.

Royce, in the program, titles the fourth lecture *Applications of the foregoing survey to various special problems*, and lists the following topics: Intensive and extensive magnitudes, descriptive science concerning the definition of manifolds and their adjustment to facts, and a search for universally applicable manifolds. On the back of note titled 'Lecture IV' is a list of mathematical topics under the heading 'Quantity.' Despite the heading, the principal focus of the lecture is how the traditional definition of mathematics as the science of quantity is no longer sufficient. Given recent discoveries in mathematics, such as in projective geometry and logical algebra, the importance of non-quantifiable objects has rendered the traditional definition obsolete. Royce defines mathematics as the "science of exactly definable order" (1904: MS 44). The remainder of the lecture concerns the fundamental importance that the ordered series, the level, and transformations serve in exactly defining the order of quantities, magnitudes, and manifolds. As before, a nascent system begins to emerge from Royce's analysis of mathematical classification. The lecture concludes with a discussion of the concept of a manifold, or "the whole system of facts

present in our experience of all grades" (1904: MS 69). The definition conveys the sense that the manifold, if universally applicable, is the limit of description, and seems to gesture toward the appreciable reality of the absolute.

The fifth and final lecture is titled *Philosophical Considerations suggested by the foregoing survey* in the program. What the foregoing survey found was that certain conceptual forms involved in the process of classification are useful and widely applicable throughout a range of scientific disciplines. From that survey, Royce inductively infers a list of categories and each describes a lawful relation which governs the composition of classes out of elements. According to Royce, the Series and the Level are the categories of the world of description, whereas "classes [of] transformations interest our thought only when they constitute either Series of Transformations, or Levels of Transformations" (1904 MS: 10). Such was the case, for example, when the transformation of momentum was describable as a body occupying different spatial positions insofar as that body coexists with others at successive points in a one-dimensional series of time. The philosophical consideration to which this lecture will finally return is the problem of the categories; that is, *why* are the Series and the Level so useful and widely applicable: Does their importance derive from the nature of thinking or from the external constraints of reality?

Royce will consider the problem in light of the doctrines of realism, Kantianism, and idealist absolutism. The realist thesis asserts that "the Series and the Level are so widely applicable because the real world as it exists apart from our human thought actually contains series and levels" (1904: 15/16). Evidence for the truth of the realist thesis ultimately derives from the fact that external reality appears to be a world of space and time; and "just as the time-series is the prototype of all series, so space is a sort of primal *locus* of levels" (1904 MS: 20). We seem, in other words, to derive particular concepts of the level and series from our experience of space and time, and space

and time appear to belong to the real world. Besides the ubiquity of the levels of coexistence in space, the irreversibility of time — its asymmetrical transitivity — suggests that the succession of elements we perceive is not in anyway dependent upon the thinking-process: For we cannot *will* the time-series according to our purposes, but must adjust our purposes to the flow of time. After a lengthy discussion on how the theory of energy and evolution further support the realist thesis, Royce moves on to consider Kant without immediately criticizing realism.

If we assume the Kantian perspective, then "the prevalence of these two categories, the Series and the Level, is due, in our science, to the nature of the human intelligence" (1904 MS: 26). Like the realist, the Kantian believes that externality is a world of space and time; but, in contrast, emphasizes how we could never construct the *idea* of space and time piecemeal out of the serial perceptions of momentary distances among, and durations between, distinct elements into, using Royce's terminology, a Series and Level expansive enough to describe the world beyond what we directly observe. We assuredly believe that beyond our serial perceptions of coexist things, that everything in space is on the same level of coexistence, even if we can only verify this is the case for a narrow range of things we directly observe. We seem to simply know *a priori* that this holds for an indefinite number of things: Why? Because "your belief that the facts do coexist in space would appear to be due to certain needs of your own intelligence, — needs which guide your interpretation of the realm of phenomena [such that] the concept of the level […] is forced upon you" (1904: MS 35).

The realist responds by arguing that the reversibility in the serial succession of perceptions, together with the relative stability and irreversibility of the things perceived, suggests that the world of space and time is independent of human intelligence. If *x* and *y* are coexistent things, I can perceive *x* prior to *y*, or *x* posterior to *y*, insofar as I shift my attention to *x* first, and then *y* or *y* first,

and then *x*. Given these coexistent things remain unaffected by the reversibility of our serial perceptions, this seems to suggest these things are on the same level of coexistence in space independently of human intelligence. Furthermore, there are also serial perceptions which are essentially irreversible: If "I were observing a ship that was downstream with the current, I could first see the ship higher up the stream, and the lower the stream; but I could not in this case reverse the order of my perceptions" (1904 MS: 37). The latter case is an instance of real succession — or asymmetrical transitivity — while the former case is a real level — or symmetrical transitivity — and both seem not to depend in the slightest on the nature or needs of human intelligence.

The discussion on Kantianism, and the realist response, serves as the occasion for Royce to present his own solution to the problem of the categories according to idealist absolutism. Royce first responds to the realist's account of real succession: Even if a succession of events is essentially irreversible — or asymmetrically transitive — the actual series of events perceived are dependent upon relating the present to earlier and later contents of our experience through the interpretation of certain memories, interests, demands, and hopes. Furthermore, we do not believe that real succession occurs only at the particular moments where our awareness is constrained to perceive a single irreversible series: "We conceive this relation as extending indefinitely into both past and future, and as being universally both unsymmetrical and transitive. That is, a character of this relation which our present consciousness suggests, we universalize" (1904 MS: 49). As before with space, we could never construct the *idea* of time out of the serial perceptions of successive and irreversible events into, using Royce's terminology, a Series expansive enough to describe the world beyond what we directly observe. Royce concludes: "It is only by virtue of conceiving this moment as a stage in the united process of a single experience that we get any possession at all of the concept of the real series of temporal events" (1904 MS: 50). Thus, the construction of space

and time as universal forms of experience are products of human intelligence constructed in accordance with the Series and Level, whose usefulness and wide range of applicability depend upon our interpretative needs.

Within the single experience of time, every particular succession of events is comprehensible; similarly, within the single experience of space, everything is posited as occurring on the same level of coexistence. Given these experiences transcend the present, at each moment "we are always engaged in interpreting the data of experience within the fold of our own idealizing activity" (1904 MS: 51). We idealize the data of experience according to our need to relate each meaningful element to some other that is implied, and thereby continuously establish connections among discriminable elements that transcend the present moment. "And we proceed to idealize these contents by giving them a place in a system" (1904 MS: 52). The most useful and widely applicable connections are the lawful relations characteristic of the Series and Level, the categories responsible for organizing the elements found in the world of description into a system of classes. Given the Series and the Level organize the content of our direct experience, as well as the ideal experiences which transcend the present, the resultant system constitutes the totality of our actual and possible experiences, interpreted according to the present requirements of thought. But the *present*, strictly speaking, is an effervescent moment, and therefore, the requirement of any present *thought* is relating each moment to this system wherein every moment acquires significance. Consequently, within this system, every actual moment is comprehensible only as a sign of a possible experience: "You see a star in Perseus, glowing for a few nights and then fading. That light becomes a sign to you of far off cosmic events, i.e., of content that might have been experienced by you had you been, an observer otherwise situated in the universe" (1904 MS: 57).

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