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A return to humility and common sense: Santayana's message to our current age

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ABSTRACT

The latest volume of the Critical Edition of Santayana's *Life of Reason*, namely, Book Five: *Reason in Science* is a welcome addition to the world of Santayana scholarship and to those interested in understanding science and its role in the pursuit of human knowledge. Science is firmly connected with common sense and common knowledge allowing us to expose current pretensions about science. Santayana's reasonable naturalism is a valuable viewpoint for dealing with the discoveries and contentions of the contemporary philosophical and scientific scene. His distinction between two kinds of science connects science to morality and ethics and allows exploration of this relationship.

Key words: Physics, Dialectics, Common knowledge, Naturalism, Morality

RESUMEN

El último volumen de la edición crítica de *La vida de la razón*, de Santayana, el tomo quinto: *La razón en la ciencia*, supone un estupendo añadido al campo de los estudios santayanianos y para los interesados en comprender la ciencia y su papel en la búsqueda del conocimiento humano. La ciencia conecta firmemente con el sentido común y el sentido común hace que nos planteemos ciertas exigencias sobre la ciencia. El razonable

naturalismo de Santayana aporta una valiosa perspectiva para abordar los descubrimientos y los retos del ámbito científico y filosófico actual. Su distinción entre dos tipos de ciencia conecta la ciencia con la moralidad y la ética, y permite explorar su relación.

Palabras clave: física, dialéctica, conocimiento habitual, naturalismo, moralidad

THE RELATIONSHIP OF SCIENCE TO COMMON KNOWLEDGE: UNIFYING THEORY AND PRACTICE

The latest volume of the Critical Edition of Santayana's *Life of Reason*, namely, Book Five: *Reason in Science*, is a welcome addition to the world of Santayana scholarship as well as to contemporary discussions of science and the pursuit of human knowledge. The two editors, Wockeck and Coleman, have done an exquisite piece of work on this Critical Edition and the introduction by James Gouinlock is highly informative and an astute interpretation of Santayana as a philosopher. Critical editions of a scholar's work are always an advance in fully understanding a crucial component of a person's thought and thought processes. All scholars and persons interested in Santayana will benefit by this work, but especially those analyzing and interpreting his work in particular. The volume will also be valuable to those working in American philosophy, in the history of ideas, and most especially philosophers of science and other scholars of science.

In what follows I will discuss this volume in some detail with special focus on Santayana's view of science, especially his distinction between two kinds of science- Physics and Dialectic. His view of science as an ongoing fallible process has striking similarities to the views of the American pragmatists, especially those of Charles Sanders Peirce and Josiah Royce, and to a lesser extent, to those of John Dewey. This is even true of his distinction between Physics

and Dialectics. Claiming that both kinds of science have a moral function, Santayana discusses the various kinds of morality that have been part of the history of human reason and his views on rational ethics will be analyzed and connected to contemporary issues in ethics and moral philosophy today. I will also discuss Santayana's naturalism and his criticism of reductionism and scientific idolatry will and explore the implications of this for our contemporary views of science and its perceived value in society today.

In Chapter I of the volume Santayana explores what he identifies as the types and aims of science. He claims that science has "flourished twice only in recorded times: once for some three hundred years in ancient Greece, and again for about the same time period in modern Christendom" [Santayana 2016, p. 3]. This claim will need to be much more scrutinized by historians or scientists and others, but the insights about the nature of science in these cases seems appropriate and worth further exploration. Thus, for example, Santayana notes that one circumstance that impeded the growth of science in ancient Greece was the 'theoretical and forensic turn proper to Greek intelligence.' Such a habit of mind lent "advantage in philosophy to the moralist and poet over the naturalist and mathematician" and later to the preference for and emphasis on philosophies of life such as that of the Epicureans and Stoics. [Ibid., p. 4] This observation fits well with Santayana's overall preference for naturalism and it connects to his claims about the needed close connection of science to common sense knowledge and experience. These remarks also make sense in the context of Santayana's belief in the importance of mathematics to science, especially in providing form to the chaos and flux of the universe. As we shall see, however, Santayana is also concerned about moral value, including the moral value of science and he will discuss in detail various form of morality and especially the rational ethics of Socrates.

The second impediment to the development of science in ancient Greek thought identified by Santayana is that each philosopher of

science “began, not where his predecessor had ended, but at the very beginning.” [Ibid., p.4] Many historians and philosophers of science view scientific change in terms of cumulative advancement. This view was advanced by Issac Newton who once remarked, “If I have seen further than others, it is by standing upon the shoulders of giants.” [Issac Newton (1675), p. 1]¹ There certainly is some cumulative element to science change, and thus to begin anew with each theory or hypothesis would indeed hinder development of scientific ideas. However, there are also times of challenge to existing ideas such as the Einsteinian challenge to Newtonian physics. And some have even proposed radical change, as did Thomas Kuhn in his *The Structure of Scientific Revolutions*. [Kuhn 1962] Santayana does see change occurring but for him it relates to the chaos and flux of being which allows an infinite array of potentialities and thus a plurality of views to develop. Though, as we shall see, he affirms that the achievements of science are only intelligible on the assumption that nature is an ordered mechanism. This will be discussed more as we note Santayana’s views on reductive naturalism.

Science, in its second birth, remarks Santayana took a very different path or form. “It confined itself to specific discoveries—the earth’s roundness and motion around the sun, the laws of mechanics, the development and application of algebra, the invention of calculus, and a hundred other steps forward in various disciplines.” [Santayana (2016) p. 4]. For Santayana, a crucial characteristic of science is the way in which “science follows the movement of its subject matter” exploring and supplementing facts in a given sphere, tracing “a given object in its own plane through continuous transformation.” [Ibid., p. 9] This understanding of scientific development certainly fits with the notion of a paradigm and the role of normal science as espoused by Thomas Kuhn or even research programs as outlined by Imre Lakatos and Larry Laudan in their explorations of how science moves forward. [Kuhn 1962; Lakatos 1968, 1970; Laudan 1977] Normal science and research programs proceed by exploring and refining and continually transforming a

specific field of science. Specialization in science is certainly one way in which science develops. A good example is the ways in which genetics have transformed from Mendel to DNA codes analysis incorporating both individual genetics and population genetics.

A strong theme in Santayana's description of science both in the Greek period and that of Descartes and Newton is his insistence on reflection, clarity and especially verification via concrete experience. Indeed, one defect of the second period of scientific flourishing, for Santayana, was the strong influence of religion, especially in Descartes and Newton. He speaks of leaving behind cosmic theories or assigning them to pantheistic enthusiasts like Giordano Bruno. But then he notes that as discoveries accumulated, they fell into systems of general physics such as those of Newton and Descartes. However, Descartes excluded the whole moral and mental world and "Newton's mechanical principles, broad as they were, were conceived by him merely as parenthesis in theology." [Santayana 2016, p. 5] Lack of reflection and self-knowledge often leads philosophers and others to review events with the view to abstract from them whatever tended to illustrate their own ideas and ideals. However, if one is aware of this and leaves the events left for scientific inference to discover, then the operation might be legitimate. More importantly, however, for Santayana, is that gravitation can be verified by concrete events. Evolutionary theory, seen by some as highly speculative, is praised by Santayana for its return to and ancient and obvious naturalism and again, he believes that natural selection, like gravitation, can be verified by concrete events.

The demand for verification and return to the facts is emphasized in Santayana's discussion of the difference between science and myth. The difference is not, he argues, in that one is more speculative than the other. Indeed, says Santayana, they are differently speculative. He writes: "... myth terminates in unverifiable notions that might by chance, represent actual existence; while science terminates in concepts and laws, themselves not possibly existent, but verified by

particular facts, belonging to the same experience from which the theory started." [Ibid., p. 6] The true contrast between science and myth is, says Santayana, "that science alone is capable of verification." [Ibid., p. 7] Science is self-confirming. Indeed, though Santayana calls historical investigation "the natural science of the past" [Ibid., p. 29] he also notes that it has the disadvantage of not being able to appeal to experience. "The facts that it terminates upon cannot be recovered so that they may verify in sense the hypothesis that inferred them. It can only be tested by current events." [Ibid., p. 29]

For Santayana, science is closely connected to common knowledge. He notes "Science differs from common knowledge in scope only, not in nature. When intelligence arises, when the flux of things begins to be investigated by representations of it, and objects at last fixed and recognizable, there is science." [Ibid., p. 11]. The subject of science is the events of common experience and its role is to explain how the events of the experienced world occur. Thus, Gouinlock, in his introduction to this volume asserts that for Santayana, "scientific inquiry is a methodological continuation of routine investigations within ordinary experience." [Gouinlock, p. xl]

In an interesting piece on "Revolutions in Science," [Santayana, 1933] Santayana discusses in some detail the need for science to stay in touch with common knowledge. He argues for the ideal of theory and practice being united in science. He writes:

Modern science until lately has realized this ideal. It was an extension of common perception and common sense. We could trust it implicitly, as we do a map or a calendar; it was not true for us merely in an argumentative or visionary sense, as are religion and philosophy. Geography went hand in hand with travel, Copernican astronomy with circumnavigation of the globe: and even the theory of evolution and the historical sciences in the nineteenth century were continuous with liberal reform: people saw in the past, as they then learned to conceive it, simply an extension of those transformations which they

were witnessing in the present. They could think they knew the world as a man knows his native town, or the contents of his chest of drawers: nature was our home, and science as our home knowledge. For it is not intrinsic clearness or coherence that makes ideas persuasive but connection with action or with some voluminous inner response which is readiness to act. [Santayana, 1933, p. 71]

Santayana faults contemporary science as failing to maintain the close relation between theory and practice and the close connection to common knowledge. He claims that theory and practice have gone in their own directions and the gap between them has become large. He even claims that both have become unintelligible. He writes: "The technique of science, like that of industry, has become a thing in itself." [Santayana 2016, p.75] Science, he finds, is less a study of things than a study of science and is more scholastic than philosophy ever was. Science has become a mystery and paradox to us. As for philosophy, Santayana claims that it has become subjective and psychological regarding the point of view as controlling or even creating the object seen. Science has become aligned with dubious metaphysics and the enemies of science have not been slow to seize the opportunity, and superstitions are on the rise. [Ibid., pp. 76-77] Though we may disagree with Santayana's reading of the situation his view does alert us to the fact that if science becomes too far removed from common experience it is in danger of not having any connection to human experience and human desire and values. It is clear today that scientists struggle with their relationships to the public and public support for science is diminishing and science is under attack. The interrelationship of theoretical science and applied science, science and technology, and science and invention needs careful exploration and critical analysis. Science and technology/invention have very different goals. Theoretical science seeks understanding of the world and explanation of how things happen, while technology seeks to conquer and dominate nature and to make it in its own image. Invention is geared to human interests and

needs, especially to the supposed goal of making life more efficient or easy. Each of these activities Santayana would see as valuable to human living and to humans seeking happiness and life fulfillment. However, if much or most of the results of theoretical science seems mysterious and paradoxical to ordinary knowledge and experience, the public support for it will diminish, as it has in recent years.

PHYSICS AND DIALECTICS: PRAGMATIC NATURALISM

In *Reason in Science*, Santayana devotes his last chapter to the topic of 'Validity in Science.' He argues that when human purposes are overtaken by confusion, arbitrary schemes of salvation appear and arbitrary substitutes for science are sought. Science itself may take on natural philosophy by suggesting speculatively what ultimate results are. Science may retreat and be viewed as methodological fiction, a view espoused by some contemporary sociologists of science. Science may become bold and claim ultimate truth about all matters human. Such seems to be the case with claims of genetic essentialism—human beings are only their genes— or neuroscientific essentialism—human beings are only their brains—. There is also reductive materialism which discounts common sense views of reality and folk psychology and reduces all to mechanism and matter. Santayana would condemn such views. Nature for Santayana is full of various potentialities.

Santayana places heavy emphasis on the notion of flux and chaos in experience. There are two important aspects of this for Santayana's view of science. The first is that given the incoherence of experience, Santayana argues that science cannot be viewed as single endeavor, rather, sciences spring up in various places at various times. The independent sciences may not meet at all, says Santayana. "... each might work out an entirely different aspect of things and cross over, as it were at different levels." [Ibid., p. 16] He cites mathematics as a field where this has actually happened. Anyone familiar with the field of mathematics knows the development of non- Euclidean

geometry first developed by in 1854 by Bernhard Riemann. This work of Riemann later became fundamental for Einstein's theory of relativity. Santayana emphatically believes that explanations of nature and experience cannot be reduced to one explanation or one science.

Nevertheless, he does believe that there is and should be commonality in the sense of discovering the richness of experience and nature. For him, these various sciences are all human, and that thus their natures can be compared. Further, he says, this tells us that "their spheres touch somehow, even if only peripherally." [Ibid., p. 16] Even more important for Santayana is the link with or basis of all with common knowledge. "Since common knowledge, which knows them all, is itself an incipient science, we may be sure that some continuity and some congruity obtains between them." [Ibid] In a clear chide to those who stay isolated in their own disciplines or special science or especially to those who believe they have the true grasp on things as they are, Santayana writes: "Great as may be the aversion of learned men to one another, and comprehensive as may be their ignorance, they are not positively compelled to live in solitary confinement and the key of their prison-cells is at least in their own pocket." [Ibid., pp. 16-17]

Santayana's philosophy is a naturalism and he claims the concept of 'mechanism' is at the heart of this view. Mechanism, for Santayana, is about the fact of recurrences in nature. The ideal of mechanism is that "the flux of phenomenon should turn out, on closer to be composed of a multitude of recurring forms, regularly interwoven." [Ibid., p. 41]. "If events could be reduced to a number of constant forms moving in a constant medium according to a constant law, a maximum of constancy would be introduced into the flux, which would thereby be proved to be mechanical." [Ibid.] Mechanism, as noted earlier, is the ideal of physics, because it is the infusion of mathematical necessity into the flux of real things. In his chapters on method and psychology Santayana describes the history of the notion of mechanism as exemplified in Descartes, in Darwin and the

theory of evolution, and then in psychology considered as a science, although psychology's pretense to science, in Santayana's judgment, comes off poorly. In his discussions of mechanism, Santayana is affirming that the achievements of science are intelligible only on the assumption that nature is an ordered mechanism.

Yet, he also affirms that, the science of existence, physics, however understood, is not the whole story. It is only half of science and, "on the whole the less interesting and less fundamental half. No existence is of moment to man, not even his own, unless it touches his will and fulfils or thwarts his intent ... in the order of values knowledge of existence is subsidiary to knowledge of ideals ... Without knowledge of existence nothing can be done; but nothing is really done until something else is known also, the use of excellence that existence may have." [Ibid., p. 99] To adore physics, as Santayana believes contemporary philosophers tend to do is to engage in a philosophical religion, and to engage in an idolatry. Like one of his philosophical heroes, Aristotle, Santayana holds that all is natural; everything ideal has a natural basis, but everything natural has an ideal development. [Santayana, 2011, p. 12].

At the heart of Santayana's pragmatic naturalism is the notion of human action in the natural world. Both scientific explanations and philosophical explications are based in the natural world. Meaning and value are generated by the interaction of our physical makeup, which Santayana calls "psyche," and our material environment. As human being with an inescapable given nature and an individual physical history, there are certain inevitable beliefs we develop; they are various and variable. For example, we inescapably believe in external objects and the general reliability of inductive reasoning; this is a result of physical history and the natural conditions of our world and ourselves. These beliefs Santayana calls "animal faith." Since these beliefs are relative to our physical histories, if our history and biological order had been different, our natural beliefs would also be different. In addition to the belief in a 'natural world,' there is also a belief in discourse, in experience, in substance, in truth and

in spirit. All these objects may conceivably be illusory. Santayana argues that belief in them is not grounded on any probabilities; rather they express a rational instinct or instinctive reason, the faith of an animal living in a world which he can observe and sometimes remodel as he chooses. [Santayana, 1923, pp. 308–309]

The chaos and flux of experience and being is, for Santayana, the context which gives birth to science and to the development of human reason. In his Volume I of *Life of Reason: Reason in Common Sense* he seeks to show how “the human animal develops instinct, passion, and chaotic experience into rationality and the ideal life. The requirements of action in a hazardous and uncertain environment are the source of development of mind in *homo sapiens*.” [Gouinlock, p. xxi]

Indeed. The two main types of science identified by Santayana—physics and dialectics—represent a double method for dealing with the chaos and flux of being.

There is one general division in science which cuts almost to the roots of human experience. Human understanding has used from the beginning a double method of surveying and arresting ideally the irreparable flux of being. One expedient has been to notice and identify similarities of character, recurrent types, in the phenomena that pass before it in its own operations; the other expedient has been to note and combine in one complex object characters which occur and reappear together ... The first expedient imposes on the flux what we call ideas, which are concretions in discourse, terms employed in thought and language. The second expedient separates the same flux into what we call things, which are concretions in existence, complexes of qualities subsisting in space and time, and having definable dynamic relations there and a traceable history. Carrying out this primitive diversity in reflection science has moved in two different directions. By refining concretions in discourse, it has attained to mathematics, logic and the dialectical development of ethics; by tracing concretions in existence it has reached the natural and historical sciences. Following ancient usage, I shall take the liberty

of calling the whole group of sciences which elaborates ideas, *Dialectic*, and the whole group that describes existences, *Physics*. [Santayana, 2016, p. 17]

Having distinguished these two types of science, Santayana goes on to categorically affirm that these two are far from independent and indeed touch at base and cooperate in their results. He claims that “all science develops objects in their own category and gives the mind dominion over the flux of matter by discovering its form.” Physics and dialectics unite at their base. Santayana notes that all science involves discourse and discourse itself is part of existence. In an amazing statement, he argues “every term which dialectic uses is originally given in embodied; it comes by illustration ... geometry, if there were space, would be, if I may say so, all of the fourth dimension, and arithmetic, if there were no pulses or chasms in being, would be all algebra.” “Living dialectic comes to clarify existence; it turns into meanings the actual forms of things by reflecting upon them, and by making them intended subjects of discourse.” [Ibid., p., 19]

United at their basis, physics and dialectics also come together in their results. In mechanical science, which Santayana sees as the best part of physics, we find that mathematics, which, in Santayana’s judgment, is the best part of dialectics, plays a major role. He writes: “Mechanism is the ideal of physics, because it is the infusion of the maximum of mathematical necessity into the flux of real things. It is the aspiration of natural science to be as dialectical as possible, and thus, in their ideal, both branches of science are brought together.” [Ibid., p. 20]

Lest one get carried away, as much of contemporary science and philosophy has, and believes that somehow dialectics in the form of mathematics and logic is self-justifying and thus the foundation for all science and thought, we heed the voice of Santayana who argues that though deduction and elucidation of an idea is the direct purpose of dialectic, this direct purpose is not its ultimate justification. In compelling words, Santayana writes:

Dialectic is a human pursuit and has, at bottom, a moral function. Otherwise, at bottom, it would have no value. And the moral function of dialectic is to further the Life of Reason, in which human thought has the ...maximum practical validity and may enjoy in consequence the richest ideal development. If dialectic takes a turn which makes it inapplicable in physics, which makes it worthless for mastering experience, it loses all its dignity; for abstract cogency has no dignity if the subject matter into which it is introduced is trivial. In fact, were dialectic a game in which the counters were not actual data, and the conclusion were not possible principles for understanding existence, it would not be a science at all ... the benefit [of excursions of dialectic] must redound to society and to practical knowledge ... [Ibid., p. 20]

For Santayana, mathematics is crucial to science, especially mechanical science, functioning as its directive principle. However, Santayana is also emphatic in asserting that mathematics is not imposed on existence or on nature, but is found indeed in the subject-matter and march of experience. He writes: "To exist things have to wear some form, and the form they happen to wear is largely mathematical." [Ibid., p. 112]. In applying dialectics in ethics and metaphysics, Santayana, observes that often in covering broad blocks of existence, the dialectician in these areas can often reach notions which cease to apply in some important respect to the object originally intended. He cites the example of Socrates in his discussion of the notion of 'courage' which he extended the meaning of his term into saying that courage must be good and thus concerned with the greater benefit and identical with wisdom. This, reflects Santayana misrepresents the original meaning, ending in paradox. After all, says Santayana, the "instinct which we call courage, with an eye to its psychic and bodily quality, is not always virtuous or wise." [Ibid. p. 113]

In contrast, argues Santayana, the mathematical dialectician has no such dangers of transcending boundaries that the ethicist or metaphysician faces. He writes:

When, having observed the sun and sundry other objects, he frames the idea of a circle and tracing out its intent shows that the circle meant cannot be squared, there is no difficulty in reverting to nature and saying that the sun's circle cannot be squared. For there is no difference in intent between the circularity noted in the sun and that which is the subject of the demonstration. The geometer has made in his first reflection so clear and violent an abstraction from the sun's actual bulk and qualities that he will never imagine himself to be speaking of anything but a concretion in discourse. The concretion in nature if never legislated about nor so much as thought of except possibly when, under warrant of sense, it is chosen to illustrate the concept investigated dialectically. It does not even occur to a man to ask if the sun's circle can be squared, for everyone understands that the sun is circular only in so far as it conforms to the circle's ideal nature ... [Ibid, p. 113]

Santayana emphatically asserts that mathematics is not justified by mathematics but by sense and by application. The fact that mathematics applies is an empirical matter. Yet, Santayana also recognizes that mathematics has a double status. It is, for all its applications in nature, a part of deal philosophy. "It is logic applied to certain simple intuitions. These intuitions and many of their developments happen to appear in that efficacious and self-sustaining moiety of being which we call material; so that mathematics is *per accidens* the dialectical study of nature's efficacious form. ... Mathematics has come to seem the type of good logic because it is an illustration of logic in a sphere so highly abstract in idea and so pervasive in sense as to be at once manageable and useful." [Ibid., p. 119]

SCIENCE AND MORALITY: THE LIFE OF REASON

Mathematics and dialectics in general, for Santayana, have a practical role. The principle of dialectic is intelligence and

intelligence is crucial to the human being's survival and progress in an uncertain world, a context of chaos and flux. To understand is, for Santayana, crucial to living not by stimulation and external compulsion but by inner direction and control. Santayana writes: "Intelligence is not a substance; it is a principle of order and art; it requires a given situation and some particular natural interest to bring it into play ... Nothing could be more ill-considered than the desire to disembody reason. Reason cries aloud for reunion with the material world which she needs not only for a basis, what concerns her even more, for a theme." [Santayana, 2016, 104-105]. Dialectics in all forms is not an alternative to empirical pursuits; its subject-matter is all things and its function "is to compare them in form and worth, giving the mind speculative dominion over them." [Ibid., p. 120] Dialectics gives significance to the flux.

Yet, he also affirms that, the science of existence, physics, however understood, is not the whole story. It is only half of science and, "on the whole the less interesting and less fundamental half. No existence is of moment to man, not even his own, unless it touches his will and fulfils or thwarts his intent ... in the order of values knowledge of existence is subsidiary to knowledge of ideals ... Without knowledge of existence nothing can be done; but nothing is really done until something else is known also, the use of excellence that existence may have." [Ibid., p. 99] To adore physics, as Santayana believes contemporary philosophers tend to do is to engage in a philosophical religion, and to engage in an idolatry. The key concept is 'intent.' Intent embodied dignifies the work, it gives it ideal form. The ideal life in science consists in seeing how things hand together perspicuously and how the latter phases of any process fill out. Intent has many modes of expression including mathematics and logical reasoning and, as we have seen, mathematics is the directive principle, the conscience of physics.

Dialectics is the science of reasoning embodied in mathematics, formal logic, the elaboration of ideas and the experimental method in science. Dialectics is inquiry into physical and social processes with

the goal to better understand their operations and interactions and, thus, ultimately, to guide rational conduct. Indeed, for Santayana, the use of dialectics in science is the ground for ethics. This brings us again to the concept of ‘intent.’ In *Reason in Science*, Santayana writes: “Intent is the vital act by which consciousness becomes cognitive and practical.” [Santayana, 2016, p. 197] As one seeks to act in the uncertain world, one of chaos and flux, where objects in the environment can function in a variety of ways with a variety of purposes. Intent determines what the object’s function and meaning shall be. “It is intent that makes objects objects and the same intent, defining the function of things, defines the scope of those qualities which are essential to them.” [Ibid., p. 199] The notion of ‘intent’ closely connects science and ethics in Santayana’s thought. Moral deliberation is moral dialectic; it begins with intent, and, also for Santayana, with self-knowledge. It is about awareness of what one most wants in his inmost self.² This, says Santayana, will then be the prime source of his ideal interests and hence of his devotion to the realization of the ideal in his own life. Once one’s ideal has been defined, then the individual’s intent is to pursue this ideal.³ This determined intent is, for Santayana, necessary given the chaos and flux of being, and the openness and endless potentialities available, Santayana writes:

Human instincts are ignorant, multitudinous, and contradictory. To satisfy them as they come is often impossible, and often disastrous, in that such satisfaction prevents the satisfaction of instincts inherently no less fecund and legitimate. When we apply reason to life we immediately demand that life be consistent, complete, and satisfactory when reflected upon and viewed as a whole. [Ibid., p. 249]

This leads to some brief comments on Santayana’s discussion in *Reason in Science* of the various forms of morality. Santayana distinguishes three kinds of morality—pre-rational, rational, and post-rational. Pre-rational morality is non-dialectical and

impulsive. About this period Santayana notes: "Reason has not begun to educate her children." [Ibid., p. 136] Rational morality he tells us, is not possible because, given the chaotic, flux-filled world, men and nations will always be guided by partial interest and thus partial disillusion. However, a rational ethics is possible which sets out germinal principles of ideal things, a sketch for a true commonwealth. This sketch, claims Santayana, constitutes rational ethics," as founded by Socrates, glorified by Plato, and sobered and solidified by Aristotle." [Ibid., p. 142]

A rational life should, argues Santayana, fulfill the aspiration for happiness. Such a life requires reflection, self-knowledge, and discipline. "Discipline discredits the random pleasures of illusion, hope, and triumph, and substitutes those which are self-representative, perennial, and serene, because they express an equilibrium with reality." [Ibid., p.253] Rational morality, for Santayana, unifies dialectic and the ideal, it interweaves a logic of practice with various natural sciences that have man or society as their theme. Again, it involves reflection and clear self-knowledge. Post-rational morality fails because it loses its base in science and experience, it ignores the flux and chaos of being, and above all, it is non-reflective and lacking in self-knowledge. It falsely believes it is not an arbitrary selection of potentialities and it loses its humility by pointing to one single eventual good. It restricts a human being by its arbitrary focus from finding his/her own natural fulfillment and ideal. The emphasis is on conformity to an ideal rather than on finding one's own ideal, an ideal suited to one's own individual nature, interests and life circumstances, including one's place in a world with other individuals. This analysis of the contemporary scene in ethics and morality seems well worth pursuing in more depth.

Science, in Santayana's judgment, should play a key role in the process of seeking human fulfillment because it, in both its forms as physics and dialectics, has a moral function, namely, to further the Life of Reason, "in which human thought has the maximum practical validity and may enjoy in consequence the richest ideal

development.” [Ibid., p. 20] Science extends and refines common knowledge; it provides understanding, that is, it allows human beings to see wider and further, and as it such it is useful, not ocular.⁴ Working together, and not separately, the sciences and dialectics can give human beings the tools for living a life of reason and for developing a rational morality. Santayana’s reflections on science and its various types and functions; its relationship to common knowledge and to experience; and its relationship to morality and the Life of Reason are rich and very relevant to pressing needs, philosophical and scientific, in our contemporary age.

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NOTES

¹ Letter to Robert Hooke (15 February 1676) A facsimile of the original letter is online at The Digital Library. The quotation is 7-8 lines up from the bottom of the first page. The phrase is most famous as an expression of Newton’s but he was using a metaphor which in its earliest known form was attributed to Bernard of Chartres by John of Salisbury: Bernard of Chartres used to say that we [the Moderns] are like dwarves perched on the shoulders of giants [the Ancients], and thus we are able to see more and farther than the latter. And this is not at all because of the acuteness of our sight or the stature of our body, but because we are carried aloft and elevated by the magnitude of the giants. In addition, this cumulative view of scientific progress was an idea prevalent in the eighteenth century and part of Enlightenment views. In the 1830s Auguste Comte argued that by accumulating empirically certified truths science also promotes progress in society. In the nineteenth century there was the Romantic vision of organic growth in culture, as well as Hegel’s dynamic account of historical change. Darwin’s theory of evolution was also developed in the 19th century. Related to views about scientific progress are epistemological

views which regard human knowledge as a process which is evolving to some end. This idea appears, for example, in the work of Charles Sanders Peirce.

² It is worth noting here that for Santayana intent is natural and also for each individual his own.

³ Here I am reminded of Josiah Royce and his focus on loyalty, on loyalty and devotion to an ideal which focuses and organizes a person's life. See: Royce, Josiah, (1908) *The Philosophy of Loyalty*, New York: Macmillan.

⁴ Gouinlock is correct also that basically Santayana's understanding of science, particularly of scientific activity, is that of the pragmatists, of Peirce and Royce. Scientific theories are fallible and scientific method, as already noted, is self-correcting. Unlike empiricism, for pragmatism and Santayana, claims are not verified by their origin in experience but rather by their termination in a fact or facts of experience

REFERENCES

- KUHN, Thomas, (1962) *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press.
- LAKATOS, Imre, (1968) "Criticism and the Methodology of Scientific Research Programmes", *Proceedings of the Aristotelian Society*, 69: 149–186.
- (1970) "Falsification and the Methodology of Scientific Research Programmes" in I. Lakatos and A. Musgrave (eds.), *Criticism and the Growth of Knowledge*, Cambridge: Cambridge University Press.
- LAUDAN, Larry, (1977) *Progress and its Problems*, Berkeley: University of California Press.
- NEWTON, Issac, (1676) Letter to Robert Hooke 15 February 1676). A facsimile of the original letter is online at the *Digital Library* of the Historical Society of Pennsylvania. The quotation is 7-8 lines up from the bottom of the first page.
- SANTAYANA, George, (2011) *Introduction and Reason in Common Sense*, Volume VII, Book One, *The Life of Reason*, Critical Edition, co-edited by Marianne S. Wokeck and Martin A. Coleman, with an Introduction by James Gouinlock, Cambridge, Massachusetts & London, England: MIT Press, 2011.
- , (2016) *Reason in Science*, Volume VII, Book Five, *The Life of Reason*, Critical Edition, co-edited by Marianne S. Wokeck and Martin A. Coleman,

with an Introduction by James Gouinlock, Cambridge, Massachusetts & London, England: MIT Press, 2016.

—, (1923) *Scepticism and Animal Faith: Introduction to a System of Philosophy*. New York: Scribner's; London: Constable.

—, (1933) "Revolutions in Science," *Some Turns of Thought in Modern Philosophy: Five Essays*. New York: Charles Scribner's & Sons. Published under the auspices of The Royal Society of Literature; Gutenberg E-book. Produced by Juliet Sutherland, Michael Ciesielski and the Online Distributed Proofreading Team at <http://www.pgdp.net>, Release Date: September 17, 2005 [EBook #16712], pp. 71-86.