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Thinking Critically in Science and Religion

Just what is critical thinking? Of course, there's no single, right answer to this question because we are dealing with metaphors. However, gaining awareness of the options for what it means to think critically can provide us with insight into the place our species assumes in the order of things.

We can identify at least three versions of "critical thinking:" 1) negativity, 2) disinterested investigation, and 3) identification of necessary conditions of possibility for experience (properly called "critique").. We can dismiss the negative form quickly although it is very popular because it is inadvertently (?!) fostered by our current education environment in North America. It actually has two moments: negativity and cleverness. Here critical thinking means examining a text to find its mistakes, and then one cleverly develops a thesis to "correct" the author. This reading strategy is the most certain strategy to employ in order to misunderstand an author although it gives one the (almost certainly, false!) impression that one is "more intelligent" than the author. Unfortunately, this form of critical thinking is ubiquitous in the academy, and its destructiveness is one of the greatest barriers to learning.

The second way of understanding critical thinking is in some respects no less destructive because it, too, overlooks important aspects of the process of understanding. Here to think critically means to speak of "disinterested examination" of a set of phenomena. "Disinterested" does not mean that we're not interested in acquiring an understanding of the phenomena but, rather, that we don't allow our personal interests or assumptions to shape in advance what we're going to allow ourselves to "see" in the phenomena.

One can too readily distinguish science and religion with this notion of critical thinking. Science is open to whatever understanding that the data themselves require. It does not impose its theories or expectations dogmatically onto the phenomena but allows the phenomena to check

and correct the theories or expectations applied to them. Religion, in contrast, is frequently viewed as extraordinary knowledge acquired by revelation that prescribes understanding independent of the data of experience. On the one hand, science is taken here to be inquisitively open, hence, critical. On the other hand, religion is dogmatically closed, hence, uncritical.

Frequently, one encounters the call for a critical investigation of religion on the basis of this "scientific method." According to this "disinterested method" of studying religion, one brackets all of one's assumptions about religion that one might already possess (either as the practitioner of a particular religion or as an opponent of religion). The goal, then, is to "disinterestedly" examine religious phenomena like one would conduct an experiment in the lab.

This kind of critical study of religion is not concerned with investigating what it is about humanity that makes it the only species remotely concerned with religion. Rather, it presupposes the existence of religious phenomena in the world and devotes attention to "understanding" of, and "explaining", the historical development of the "empirical," religious data. By placing its primary emphasis on the "data" of religion, it by definition is *analytical*. This means that it carefully identifies and draws out the distinctions between and among the phenomena. The claim at the heart of disinterested, analytical engagement is that it seeks to identify "what is there in the phenomena" without adding anything from the observer. What the critical study of religion in this case means, then, is that one brackets all questions of "truth" and "justice" to focus on understanding and description of the "things themselves" (i.e., the phenomena).

Above all, disinterested, analytical study of religion places value on "pluralism." It views religious phenomena through the lens of cultural relativism. The worse thing that one can do when it comes to the analytical study of religion is to undertake the investigation by privileging in advance one's own cultural understanding (e.g., either religious commitments or scientific skepticism toward all things "religious") to engage in an evaluation of the "other" out of the assumption that the other is "obviously" inferior.

The critical study of religion in this form is a classic example of the 17th Century orientation of the French Enlightenment. Not only will knowledge "set us free," but also knowledge will make us better persons. The greatest hindrance to the intellectual and moral advancement of humanity is ignorance.

There are serious epistemological and moral problems with this form of critical thinking grounded in the methodology of "disinterested" inquisitiveness. Epistemologically, it assumes that we acquire understanding merely by "opening our eyes" and making analytical distinctions within the phenomena as they are "given." Although on the surface perhaps laudable for its attempts to bracket distorting presuppositions about the way the data *must be* prior to our investigation, this is an incredibly naïve epistemology. It entirely overlooks the *synthetic* aspect

of understanding (i.e., something is being *added to* the phenomena) that is presupposed by all *analytic* understanding of the data themselves.

It is not trivial that the phenomena of religion (as well as most of life) are hardly analogous to the disinterested investigation of phenomena in the lab. The science lab operates on the basis of control groups and duplication of the conditions of the experiment in order to reduce the spectrum of causal explanation for the phenomena to the highest degree possible. Although there is much repetition in religion and life, there is little if any duplication. Historical life does not allow for duplication not only because of the linear or asymetrical character of phenomenal time but also because of the absolute uniqueness that is each individual. There will be no other individual in the universe that is a duplicate of the individual.

Given the impossibility of duplication and the impossibility of establishing a control group for most of what happens in historical life,[1] we either have to say that life is incapable of being grasped "critically," or we must take the example of science lab to be an exceptional paradigm that is applicable to a limited range of phenomena. To insist that critical thinking is "disinterested examination" becomes, unintentionally perhaps, more a code word for an ideologically driven investigation on the basis of a commitment to humanity's instrumental reason as the only way to determine "truth" to which we will return below.

This paper champions a third understanding of critical thinking in contrast to negative cleverness and empirical, disinterested investigation. Critical Idealism enables a profound, critique of understanding and of historical life that does not separate science from religion but already finds religion (but not static, doctrinal religion or pastoral religion) in every laboratory. However, before we turn to this alternative understanding of critical thinking, we must make an observation about a profound oversight (for the most part) in the sciences. "Facts" are not mere perceptions!

It is frequently assumed that we get the objective facts just by opening or eyes and, under the requirements of "disinterestedness," by being analytical after having left our presuppositions in the coatroom. There is no better illustration of the naïve error of this assumption than what we call the Copernican Revolution (CR). The CR requires that we deny our senses. Our sense experience is unequivocal. The sun is moving, and we are standing still. We can examine the empirical evidence as analytically as we want, but we will not be able to establish empirically

[1] Mircea Eliade speaks of „sacred" or eternal time in contrast to "profane" or asymmetrical, historical time. See "Chapter II: Sacred Time and Myth" in *The Sacred and the Profane: The Nature of Religion* (New York: Harcourt Brace Jovanovich, Publishers, 1959): 68-113. His distinction depends upon a metaphysical dualism that is not merely questionable for "disinterested" critical thinking but also for Critical Idealism to be described below. At this point, we can say that, whereas it is impossible to prove or disprove Eliade's dualism, his metaphysics undermine precisely those capacities that experience teaches us to be *necessary* for us to be the individuals and species that we appear to be.

that the sun is standing still and we are moving on the rotating earth at some 1,000 miles/hr. Nonetheless, every school child learns that the sun is standing still and we are rotating. How do we know?

Some, of course, will say that we know by critical thinking. However, any bone fide disinterested, critical thought must scoff at such a blatant violation of the obvious conditions of "truth"! Disinterested, critical thought must appeal to sense data to eliminate the influence of (imperceptible) presuppositions that distort our perception/understanding. What is so compelling about the CR that we are so willing to accept it as a fact of objective truth, when it so obviously contradicts perception? Mathematics!

It is the mathematics of the CR that gives us confidence that we have obtained objective truth, despite the contradiction of the empirical evidence. Of course, Galileo's observation that there were moons circling around Jupiter provided him with empirical evidence that not everything was circling around the earth, but that empirical evidence does not confirm that the sun is standing still and that our planet is rotating on its axis. No other species on this planet (as far as we know) is able to employ mathematics to establish objective truth. *The CR displaced humanity from the center of the physical universe only to firmly establish humanity at the center of the epistemological universe*.

In addition to mathematics, however, there is another assumption in play with the CR. Physical events occur according to a lawfulness that *must* apply at all times and in all places. There are two further non-empirical elements involved with this new assumption: 1) we do not perceive laws, only their effects; and 2) we cannot prove or disprove that physical laws apply at all times and in all places.

The reason for the second element is a consequence of the first but not because we are unable to get to all times and all places to empirically test for physical laws. Rather, the "fact" that laws are imperceptible (only their effects are perceptible) means that the laws *are and will never be empirical*. We cannot prove or disprove any absolute, universal laws; even physical laws. This by no means suggests that our confidence in physical laws is *false*. Rather, it means that our confidence in physical laws is a *necessary assumption incapable of proof or disproof.*

Here we find that so-called analytic, "disinterested" (i.e., presuppositionless) investigation of empirical phenomena is misleading. It is simply not the case that critical thinking in this form gets us to presuppositionless, certain truth. Science is not true because it is presuppositionless; religion (and any other form of dogmatism, including scientific dogmatism or scientism) is not false because it is committed to presuppositions. The difference between critical science and religion is not that one is presuppositionless and the other is not. The difference is between knowledge based upon presuppositions that are *necessary* and knowledge

based upon presuppositions that are purely capricious and speculative. However, both options can be found in science and in religion. Science need have no privileged position over religion.

We must *necessarily* assume that the physical world is governed by a lawful order if we are going to understand the physical world. Our confidence in our assumption is enhanced the more that our grasp of physical laws constitutes an ever-expanding theoretical system of laws that help us to understand and interact with the perceptible effects of those laws in nature. This system of laws that illuminate the relational structure of reality constitutes the crucial shift from the "science" of substances to the "science" of relationality or functions graspable by mathematics.[2] However, this ever-expanding theoretical system of laws is *not empirical*. Four example, we cannot touch, taste, hear, smell, or see gravity. We see the effects of gravity in the falling apple, but we can see neither gravity itself nor Newton's mathematical law in the falling apple.

Here we have a second reason to be concerned that defining critical thinking as "disinterested examination" becomes more a code word for an ideologically driven investigation *on the basis of a commitment to instrumental reason* as the only way to determine "truth" – without rushing into the arms of religious dogmatism. We cannot prove or disprove the theoretical system of laws that govern nature. However, it would be ridiculous to ignore the insights that we gain when we embrace *the assumption* that there is a theoretical system of laws that govern nature.

Nonetheless, when we insist that the "facts" prove that there is a theoretical system of laws that govern nature at all times and all places, we are making an ideological claim analogous to the literal, metaphysical claims of the religious Fundamentalist that God governs at all times and in all places. The religious Fundamentalist may appear to possess the apparent "advantage" of trumping the eternality of nature with personal immortality. Religious Fundamentalism serves self-interest far more blatantly than science. However, eternity is a long time, and it is inaccessible to the senses. Adjudicating between the claims of religious Fundamentalism and science, then, involves more than a mere appeal to the senses: either to nature or revealed scriptures.

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[2] See Kant, *The Critique of Judgment* AAV: 177: „[…] the mathematician […] leaves the empirical data of his problem undetermined and brings only their relation in their pure synthesis under the concepts of pure arithmetic and thereby generalizes their solution […]" See as well, Ernst Cassirer, *Die Begriffsform im mythischen Denken* (Leipzig/Berlin: B.G. Teubner, 1922); *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit*., 4 vols.(Darmstadt: Wissenschaftliche Buchgesellschaft, 1994); *Philosophie der Symbolischen Formen*, 3 Band.(Darmstadt: Wissenschaftliche Buchgesellschaft, 2001); and *Substance and Function and Einstein's Theory of Relativity* (New York: Dover Publications, 1953).

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For the purpose of trying to understand "critical thinking," though, we have made an important discovery: scientific facts are by no means simply perceived in the senses by merely bracketing assumptions so that, if there is to be a "critical investigation" of religion and morality, it has to occur under another flag than "empirical, disinterestedness."

In short, facts are not merely empirical. Facts *necessarily* involve our *adding things to the empirical evidence* that are not and cannot be in the empirical data. With respect to the CR, mathematics is not "natural." In other words, mathematics is not seen or derived from the senses despite all the ink spilled that seeks to "prove" the empirical nature of mathematics. We don't see mathematics by opening our eyes, and we don't get mathematics simply *by closing our eyes*. As, apparently, with our sense of color, we have to learn the symbolic orders of mathematics and color for ourselves as individuals. We don't see colors, we learn them.

A chat with many (most?) undergraduates at a Liberal Arts College will readily confirm that there is nothing *natural* about mathematics. It takes great effort to acquire mathematics, and the pedagogical assumption that some are "mathematical by nature" is a misnomer. No one possesses mathematics by birth. As with the case of language, we are born with a capacity that must be cultivated, and some of us can do that more readily than others – just like some of us learn to draw more readily than others. However, we do ourselves a disservice as individuals and as a species to assume that the rest of us should just fold our hands and wait for the oracles of the mathematical and artistic geniuses. Rather, we are better served by acquiring "critical thinking" for ourselves as individuals and as an invisible, human community than waiting for the empirical products of the geniuses.[3]

This call to "critically think" for ourselves, though, is a very different kind of critical thinking from that of *analytically*, disinterested, critical thought with which we began. This kind of critical thinking is *synthetic* because its focus is not *outward* to seek truth in mere empirical phenomena but *inward* to determine the *necessary conditions of possibility* for us to experience and act empirically.[4] Critical Idealism is not critical of science and religion. It subjects both to *critique*, that is, to the illuminating of the imperceptible, yet necessary (not capricious) conditions that make our experience of science and religion possible, in the first place. *This* is the meaning of the Copernican Turn that is Critical Idealism: to turn from confidence in empirical evidence alone to confidence in the *necessities* of internal capacities.

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[3] We will contrast below such a "culture of skills" from a "culture that promotes the moral will."

[4] Perhaps no one formulated this shift in focus from external empiricism to internal capacities more rigorously than the philosopher/mathematician Edmund Husserl. What we have described as analytical, "disinterested" empiricism, Husserl calls the "natural attitude" of the empirical sciences. His entire project of "Phenomenology" is a critique of the "natural attitude." See his *Philosophy as Rigorous Science*, trans. by Quentin Lauer (New York, Harper Torchbooks, 1965).

It is not merely mathematics that we *add to* empirical data to get the facts. Even more generally than merely mathematics, we also add concepts and a host of symbol systems that are imperceptible to our sense experience in order to determine objective knowledge. Facts are a combination of empirical data and *necessary assumptions that must be added to the empirical data.* It is impossible for us to "bracket out" such elements that are *necessary* for our understanding and acting. Critical thinking, then, is more adequately understood as becoming consciously aware of the ubiquitous and shaping activity of those elements that we *necessarily* must *add to* phenomena so that we are not blindly applying them in ways that distort understanding and undermine our assumption of responsibility for our actions. In short, critical thinking does not mean escaping assumptions. *Critical thinking means gaining awareness of the assumptions that are necessary* (!) *for understanding and responsible action*.

One could describe the difference between science and religion as a difference in causal explanation. Science frequently maintains that there is a single form of efficient causality that governs all events: physical causality. Any insistence on such a single form of efficient causality, though, is *dogmatic scientism and misanthropic*.

We can understand full well why scientism would want to make the claim that there is only one form of efficient causality. From the perspective of dogmatic science, the introduction of any other causal agency would undermine any confidence in our ability to understand events because we could never be certain that the laws of physical causality are in fact governing the phenomena under investigation – they may be governed by some unknown other causal system or agency at any point in time if such a causal agency is allowed into the system.

However, scientism succumbs to dogmatism for at least two reasons: 1) It assumes that we can prove physical causality by the empirical data; and 2) it assumes *without grounding in* any *necessity* that there can be only one form of efficient causality.

With respect to the first assumption, we have seen already that physical laws as well as the causality that they govern are known only be their effects, not by our perception of them in nature or anywhere else. In light of their imperceptibility, it is impossible for us to claim absolute proof (or disproof) of any causal explanation – even the most ridiculous (in our personal opinion) because a proof requires empirical evidence in addition to logical consistency.

As we have seen, though, the search for causal explanations is *necessarily* grounded in *our assumption* (not proof) that nature is actually governed by physical laws. Any form of causal explanation that would deny or contradict physical laws must *necessarily* be viewed with dismissive, *critical skepticism*. This is not because we can empirically prove in the senses that such a causal explanation is false but because such an empirical causal explanation would make any and all confident understanding of nature impossible. The key element of critical thinking here is *necessity*, not empirical evidence alone.

With respect to scientism's second assumption that there can be only one form of efficient causality, it ignores that there could be a form of efficient causality that complements but never contradicts physical, efficient causality. Humanity appears to possess such a form of efficient causality. We appear to be able to initiate sequences of events that nature (physical, efficient causality) could never accomplish on its own, and this form of efficient causality is entirely complementary to the efficient causality of nature.

For example, the components of a computer are all natural. However, we can lay them out on a table and wait forever: They will never combine by themselves to become a computer. Can we prove that to be the fact? Actually, "No!" We can't wait forever, but it is a far more than a merely speculative assumption that they will never become a computer by themselves no matter how long we wait. It is a speculative assumption based upon our experience of the effects of our own creative, autonomous freedom that is manifest in the senses by our ability to change (unfortunately, even destroy) nature. In order for us to exercise such an efficient causality, we have to act in consort with, not contrary to, the laws of nature.

Why does Critical Idealism speak of creative, *autonomous* freedom? We must take the term *autonomous* not in the sense of "rugged individualism" that is independent of all external authority. Rather, autonomous is taken here in its literal Greek sense: to give oneself the law (auto-nomos). Although this could be taken to mean that we can apply any "law" that we wish to govern our creativity, Immanuel Kant points out that this "giving oneself the law" is pointing to the individual's *necessarily* having *to apply for oneself* an absolute, universal moral principle to approve (or disapprove) the sequence of events that one is about to initiate. We apply principles by *necessity* not because they are imposed upon us but because a causal system by definition must be assumed to be governed by laws.

Nature is a causal system so that it *necessarily* must be governed by a *physical*, lawful order – although we cannot prove or disprove that to be the case. Creative, autonomous freedom is a causal system that *necessarily* must be governed by a second, lawful order – although we cannot prove or disprove that to be the case. The only kind of laws that *necessarily* are in conformity with our creative, autonomous freedom are moral principles that, unlike physical laws, we can choose to ignore. If we couldn't choose to ignore them, our autonomous freedom wouldn't be *free*, and we would be mere automatons or mechanical toys..

As a consequence, the laws of nature cannot be the same laws that govern creative, autonomous freedom because the laws of nature are *imposed upon us*. In other words, we don't *capriciously* create the moral principles that apply to our extra-*ordinary* efficient causality any more than we *capriciously* create the physical laws that we must employ to understand and to act properly in conformity with nature. Yet, only the individual can self-legislate the moral principle for her/his decisions and actions if humanity takes itself to possess this creative, autonomous

freedom – in addition to nature. Our precarious position[5] is that we can neither prove nor disprove that we possess this efficient causality of creative, autonomous freedom and that we can neither prove nor disprove that there are universal, moral principles that govern creative, autonomous freedom.

However, the only condition under which a moral principle is *necessary* is under the condition that there is an efficient causality that can accomplish things that nature cannot accomplish on its own.[6] It doesn't even occur to us to hold physical events, plants, or other animals morally accountable for their events/actions because they are governed by an imposed lawful order by nature. We know that lying is wrong and that beheading an aid worker is wrong not because of divine revelation but because both contradict the creative, autonomous freedom of the individual concerned. Lying is to exercise one's creative, autonomous freedom in self-contradiction, and beheading an aid worker is to snuff out the unique, creative, autonomous freedom that gives any and every individual dignity. In both cases, though, our acknowledgement of the moral principle *necessarily presupposes that human beings possess an efficient causality irreducible to the efficient causality of nature*.

We can now return to our theme of *critical thinking*. Critical thinking for Critical Idealism does not simply appeal to appearances, but it identifies those imperceptible elements in addition that are *necessary* for us to experience nature and ourselves the way that we do. Critical thinking, then, points out that causal explanations must be *added to the phenomena they are meant to explain* because we don't perceive causes, only the effects of causes. Critical thinking acknowledges that a causal system must *necessarily* possess a consistent lawful order in order for explanation to be possible.

It is for this *critical* reason that we can question the reality of divine intervention in nature because by definition it would be *in contradiction to the laws of nature*. We might readily welcome such an intervention if it serves our personal self-interest, but we should be extremely skeptical of it, nonetheless, even if we cannot *disprove* it in light of the fact that it is an imperceptible cause. Our skepticism, however, is not based upon our confidence in merely a *human*, instrumental reason to calculate, predict, manipulate, and control phenomena correctly, which history and not only the difficulties of establishing absolute certainties teaches us to doubt. Rather, our skepticism with respect to divine intervention in nature is based upon the *necessity*

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[5] For Kant's description of our "precarious position," see *Groundwork of the Metaphysics of Morals* AA IV: 425-426.

[6] This is what Kant means when he says n the "Preface" to *The Critique of Practical Reason* that "… freedom [is] … the ratio essendi of the moral law; however, the moral law is the ratio cognoscendi of freedom." (AA V: 4) [Trans. McG] In the "Remarks" to §6 in the same text, Kant writes: "He [the individual] judges … that he can do something because he is conscious that he should, and [he] recognizes within himself freedom, which without the moral law would remain unknown to him." (AA V): 30 [Trans. McG]

that causal systems possess a lawful, causal order. We *necessarily* assume, then, that nature has a lawful, causal order because denying it makes understanding impossible.

Critical thinking identifies by means of "critique", the *necessity* of our exercising a kind of efficient causality that is irreducible to nature although it cannot contradict the efficient causality of nature and continue to function. Critical thinking identifies the *necessity* of a set of laws that govern this special kind of efficient causality that we appear to possess. However, critical thinking points out that this *necessary set of moral principles* cannot be heteronomously imposed upon us as is the case of physical laws. Rather, our freedom *necessarily* requires that we self-legislate these moral principles only for ourselves. Moral principles are the only laws that are compatible with creative, autonomous freedom because they must be self-legislated. In short, we are moral beings not because we *must be*, but we are *moral beings because we can be*.

It is obvious that we experience our extra-*ordinary* form of efficient causality only because we are in a universe governed by physical, efficient causality. It behooves us, then, to investigate nature as thoroughly as possible to tease out our understanding of the laws that govern it. It also behooves us to pay attention to the laws that govern our own efficient causality of creative, autonomous freedom. We occupy an unusual position in the natural order, but it is a position that is achieved only if we exercise the lawful order (moral principles) upon which our unusual position depends. We be(come) human only by exercising our creative, autonomous freedom according to moral principles.

What is the role of critical thinking in science and religion? Critical thinking, according to Critical Idealism, views science and religion as entirely complementary just as the causal order of nature is complemented by the causal order of creative, autonomous freedom.[7] Both science and religion are dependent upon an order of things not of their creation. Both science and religion are concerned with the pursuit of human excellence. Both science and religion are concerned with the same *necessary conditions of possibility that make our experience, understanding, and actions possible in the first place*.

To be sure, we must distinguish between the *historical manifestation* of religion and *pure, practical religion* (i.e., creative, autonomous freedom and moral effort). Given that we occupy one universe that we understand on the basis of one rational order (not to be confused with Western, instrumental reason),and that we act in conformity with one, universal set of moral principles, we can say that all of humanity shares the same conditions of *pure, practical religion*. It because humanity doesn't manifest that pure, practical religion in the same way. that we can *analytically* distinguish the differences that are its historical manifestation and the common

[7] Kant distinguished between two „domains" of understanding precisely on the basis that they are the only two regions of experience for which it is *necessary* that there is a lawful, causal order that governs them complementarily: nature and freedom. See *The Critique of Judgment* AA V: 174ff.

rational capacity to understand and act in the world that is shared by all humanity. We distort the religious core, however, when we take the historical manifestation (scriptures, creeds, rituals, institutional structure) to be the definition of ("our") religion. Religion at its core (*not to be confused with nor to make irrelevant the possible "pastoral" dimension and/or function as a "social" institution that also belongs to religion*) is concerned with the moral improvement of humanity based upon universally shared, imperceptible *conditions of possibility* that make it possible for us to understand and to act in the world.

Critical Idealism offers a form of critical thinking that unites science and religion in a common enterprise without engaging in a culture war with historical religion over whose presuppositions are correct. "In fact," neither science, nor pure, practical religion, nor dogmatic religion is capable of proving or disproving one another's claims. However, critical thinking provides us with the strategy of determining *not what is true* but *what is necessary* for us to experience and act as we do that enables us to adjudicate among the claims of science, practical religion, and dogmatic religion. Critical thinking also provides us with a ground of *critique* of science and historical religion that doesn't succumb to cultural relativism. Any human understanding or activity that contradicts or eliminates those conditions of possibility that are *necessary* for us to understand and to act in the world can be legitimately called into question because those *necessary* conditions of possibility are what make it possible for us to be(come) human and because those *necessary* conditions of possibility are universal, not culturally relative.

Religion, then, is concerned with what Kant called the "culture of skills,[8]" that is, with *the mere manifestations* (the understanding and/or consequences) of creative, autonomous freedom. However, religion is far more concerned with the *conditions of possibility* that makes those extraordinary human achievements, especially when they are too narrowly identified with genius,[9] possible in the first place. *All humanity* possesses these same *conditions of possibility*. As a consequence, we can speak with Kant of the "culture that promotes the will" in the sense

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[8] On the difference between the "culture pf skills" and "moral culture", see the *Critique of Judgment* AA V: 431ff. Moral culture (a community devoted to the invisible kingdom of ends) is central to Kant's project. See further in the *Critique of Judgment*: social order necessary to be human AA V: 297; culture of happiness and "culture of the human being" AA V: 430. *Critique of Pure Reason* B 878-879; *Critique of Practical Reason* AA V: 153; *Metaphysics of Morals* AA VI: 386-387; 392-393; *Anthropology from a Pragmatic Point of View* AA VII: 327-328, 329-330; *On Pedagogy* AA IX: 449, 480; division of mental capacity for culture into a) physical, b) moral; divided into the lower and higher capacities of the understanding AA IX: 475-476; *Vorlesungen über die philosophische Religionslehre* (Leipzig: Bei Carl Friedrich Frans, 1817): 137. However, the theme is present long before the "Critical" turn of 1781. See *Vorlesung zur Moralphilosophie* . Edited by Werner Stark and Manfred Kühn. Berlin: Walter de Gruyter, 2004: 204-205.

[9] For Kant's discussion of „genius" as the "inborn capacity of the mind (*ingenium*) through which nature gives the rule to art." (AA V: 307), see the *Critique of Judgment* AA V: 307ff. "In the scientific sphere […] the greatest discoverer differs only in degree from the most hard working imitator and apprentice, whereas he differs in kind frm someone who is gifted by nature for beautiful art." (AA V: 309)

that it consists of that invisible, **social world (!)** as a *kingdom of ends* that understands the presence and significance of these *necessary*, *yet invisible* conditions of possibility, and silently encourages one another to exercise our creative, autonomous freedom according to the system of law that appears only to apply to humanity: moral principles. Here one does the right thing because it is right, not because it is merely in our self-interest. The "culture that promotes the will" is an invisible kingdom of ends that begins with the dignity of all individuals, acknowledges the *necessity* of universal moral principles, and provides support to one another precisely at those points where the individual decides to act on the moral principle and not on mere self-interest. Such a kingdom of ends is by no means limited to historical manifestations of religion. Such a kingdom of ends is present in the science lab, as well. At their core, science and religion are united by "critical thinking."

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