
CRITICAL HERMENEUTICS AND CRITICAL REALISM IN THE DIALOGUE BETWEEN SCIENCE AND THEOLOGY

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Abstract

The intellectual world has long been divided between the humanities and the sciences. It has been thought that the humanities are the study of ‘understanding’, and the sciences the study of ‘explanation’. Yet does a point that connects the two fields exist? This article shows that even if the humanities have attempted to be separated from the sciences, both have had a direct and indirect relationship in history of hermeneutics. In the mid-twentieth century, however, some philosophers, theologians, and scientists initiated an ambitious and challenging project to methodologically relate ‘understanding’ to ‘explanation’ and to build a constructive bridge between humanities including Theology and Science. Representative scholars are Paul Ricoeur who employs ‘critical hermeneutics’ and Ian Barbour who practices ‘critical realism’. This article finds that the two scholars are able to have mutual complementarity. I argue that Barbour’s critical realism can contribute to the expansion of hermeneutical area beyond the Humanities and Social sciences into the Natural sciences. I also suggest that Ricoeur’s critical hermeneutics can lead the field of Science and Theology to open itself to the critiques of ideology.

Keywords: critical hermeneutics, Ian Barbour, dialogue, science, theology

1. Introduction

The intellectual world has long been divided between the humanities and the sciences. The Humanities have been considered the field of ‘understanding’ and Science the field of ‘explanation’. Since modernity, scholars from the Humanities have attempted to differentiate the Humanities from Science by considering Hermeneutics as their main methodology, while scientists have sought to eliminate aspects of subjective understanding from Science. Yet is there a point that connects both fields? In the mid-twentieth century, some philosophers, theologians, and scientists initiated an ambitious and challenging project to methodologically relate ‘understanding’ to ‘explanation,’ and to build a constructive relationship between Science and Humanities including Theology. Representative groups are scholars supporting ‘critical hermeneutics’ and those

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representing ‘critical realism’. In this article, I focus on Paul Ricoeur’s critical hermeneutics and Ian Barbour’s critical realism.

Paul Ricoeur seeks to bridge the gap between understanding and explanation with his critical hermeneutics. Critical realism, which is one of the main epistemologies and methodologies in the interaction between Science and Theology, employs a similar strategy in its interpretation of the cosmos (the world). I believe that there are common elements and some points in Ricoeur’s critical hermeneutics and Barbour’s critical realism might be able to interact with each other. Through exploring and comparing the two, therefore, I argue that Barbour’s critical realism makes a contribution to expanding the field of Hermeneutics beyond the Humanities and Social sciences into the Natural sciences. At the same time, I also discover that Ricoeur’s critical hermeneutics can ask the field of Science and Theology to pass ideological criticisms since its hermeneutic of suspicion will help theologians keep a critical position when they attempt to reconstruct Theology through making conversations with Science. Before comparing the two methods, however, we first need to explore the background to the relationship between Hermeneutics and Science.

2. Discussion

2.1. Hermeneutics and Science

Hermeneutics is a science that studies all objects which are open to interpretation, that cultivates methods and processes to help readers understand those objects, and that reveals the essence of interpretive actions. In this book, Palmer provides six different definitions of Hermeneutics in the history of Hermeneutics as “(1) the theory of biblical exegesis; (2) general philological methodology; (3) the science of all linguistic understanding; (4) the methodological foundation of *Geisteswissenschaften*; (5) phenomenology of existence and of existential understanding; and (6) the systems of interpretation, both recollective and iconoclastic, used by man to reach the meaning behind myths and symbols” [1].

If one uses the term ‘science’ broadly, to indicate scholarship in general, Hermeneutics is certainly a science (*Wissenschaft*). However, the term science in this paper is limited to its narrower meaning, namely Natural science and in a broader sense, to Social science. Hermeneutics is generally considered part of the Humanities. If this is true, one might ask why this article deals with Hermeneutics and Science at the same time. The question can be answered in the following way: the development of Hermeneutics has had both a direct and indirect relationship with the development of Natural science.

During the seventeenth and eighteenth centuries, rapid developments in Science changed the intellectual history of Europe. For example, the physics of Isaac Newton contributed to the mechanistic worldview of the modern age, and the natural philosophy of Francis Bacon founded a basis for empirical and experimental science by establishing the inductive method [2]. These scientific

theories, which are rigid, measurable, and assured by experiences and experiments, provided intellectual inspiration for modern philosophers.

Although Rene Descartes and David Hume stood in individually different traditions, Descartes in rationalism and Hume in empiricism, both were evidently influenced by contemporary science. Descartes was influenced by “the clarity and certainty” of sciences such as Mathematics, Geometry and Algebra that he had studied in his earlier days [3]. Hume pointed out that “the experimental method which has been applied with such success in natural science should be applied also in the study of man” [3, vol. 5, p. 261]. Immanuel Kant established his critical philosophy by criticizing ‘dogmatic rationalism’ and ‘sceptic empiricism’ and then synthesizing rationalism and empiricism within his framework of transcendental philosophy in his first masterwork, the *Critique of Pure Reason* [2, p. 326-328]. These mutual interactions and developments between modern science and Philosophy constituted the world of the Enlightenment.

At the same time, as Kant’s construction of critical philosophy reveals, the issue of divinity (religion) was excluded from the field of reason (Science) during modernity. Religion was relegated to the area of private morality and had nothing to do with scientific advances. The intellectual of the Enlightenment ultimately considered religion irrational, unscientific and non-objective. Many intellectuals ignored or even derided religion and Theology. We can find this atmosphere in Friedrich Schleiermacher’s *On Religion: Speeches to its Cultured Despisers*, where he summarizes why the intellectuals despised religion: “[Y]ou say religion is empty and despised by you because what lies at the centre is completely heterogeneous with it; it can in no way be called religion...and religion everywhere can be nothing other than an empty and false delusion...” [4] Making a Christian apology against this derision was Schleiermacher’s motive in writing the above book. Even though there was disdain and mockery from his fellow intellectuals who were possessed by rationalism and scientism, Schleiermacher responded to them with help of romanticism also developed out of a reaction against excessive rationalism and scientism.

Romanticism “was a quasi-philosophical literary and artistic movement that reacted against the Enlightenment picture of the Universe as a machine that could best be studied by the analytical techniques of the sciences” [2, p. 351]. Romanticism emphasized emotion, sensitivity, nature, and nostalgia and at the same time mistrusted reason, science, civilization, and progress. The context of romanticism played an important role in Schleiermacher’s establishing “the feeling (consciousness) of being absolutely dependent” [5] as the foundation of religion and Theology. This is the background against which ‘modern hermeneutics’ developed.

Friedrich Schleiermacher and Wilhelm Dilthey thus expanded Hermeneutics from a simple exegesis of biblical texts (regional hermeneutics) to the interpretation of all texts [6]. (In the same book, Ricoeur concludes that Schleiermacher’s hermeneutics raised “exegesis and Philology to the level of a *Kunstlehre*, that is, a ‘technology’” [6, p. 45].) In order to get a proper understanding of a text, Schleiermacher emphasized the importance of the

author's language, style, and context with his method of "grammatical and psychological interpretation" [7]. He attempted to diminish what readers misunderstand texts through a "hermeneutical circle", which is a process of mutual checking between the part and the whole [7, p. 81, 84, 87]. Dilthey, who inherited Schleiermacher's psychological approach and hermeneutical circle, developed the horizon of hermeneutics to encompass "history as a whole" [6, p. 48].

It is interesting that the thinking of Schleiermacher and Dilthey contained elements of the Enlightenment. Their search for universality and objectivity for a general hermeneutics was characteristic of the Enlightenment. Dilthey wanted to make the Humanities a general, valid, and objective study, much as the Natural sciences had become [6, p. 49; 8]. He attempted to achieve this through Hermeneutics. The purpose of such hermeneutics was to find the meaning in a text that was as close as possible to the author's intention.

At the same time, Schleiermacher and Dilthey also had an element of romanticism in their hermeneutical methods. The method of psychological interpretation is one example of their romanticism. Yet psychology here is different from contemporary scientific psychology, which analyses human behaviours using scientific methods. In the context of romanticism, which emphasized emotion and the inward aspects of things, rather than reason and the outward aspects of things, they offered a method of psychological interpretation in which a right interpretation of a text comes from understanding the inner world of the author, namely his or her mind. In order to grasp an author's mind, understanding an author's life context, which was a basis of life philosophy at that time, was also important. Expanding the hermeneutical horizon to life and history was Dilthey's significant contribution, through which hermeneutics advanced to become ontological interpretation.

Likewise, Schleiermacher and Dilthey contributed to elevating Hermeneutics to general scholarship. They attempted to establish Hermeneutics as an objective and systematic study much like Natural science, yet at the same time, build a '*Geisteswissenschaft*' with methods which were totally distinct and separate from Natural science. This is a self-contradiction, however. Paul Ricoeur identifies Dilthey's methodological conflicts in Dilthey's questions: "Dilthey poses his fundamental question: how is historical knowledge possible? Or more generally, how are the Human sciences possible? This question brings us to the threshold of the great opposition which runs throughout Dilthey's work, the opposition between the explanation of nature and the understanding of history. The opposition is heavy with consequences for Hermeneutics, which is thereby severed from naturalistic explanation and thrown back into the sphere of psychological intuition." [6, p. 49]

At this point, we find that modern hermeneutics longed for the objectivity pursued by modern science, yet at the same time separated itself from modern science in order to establish the Humanities. Thus modern hermeneutics continued to have a relationship with Natural science.

The move towards objectivity in modern hermeneutics belongs to the area of Epistemology, because their hermeneutics were intended to reduce misunderstanding and reach a holistic understanding. However, this attempt to create an objective and epistemological hermeneutics was criticized as part of the emergence of phenomenology.

According to the phenomenology founded by Edmund Husserl, absolute objectivism is impossible, because understanding an object does not work without the participation of the subject (consciousness). He explained consciousness as his “doctrine of intentionality”, which “refers to that feature of consciousness characterized as tending toward, pointing to, or directedness toward an object” [2, p. 531].

The philosophy of Martin Heidegger, which applied phenomenology to ontology and the hermeneutics of Georg Gadamer, which expanded Heidegger’s ontology into the field of hermeneutics, were crucial to developments in Hermeneutics in the twentieth century. According to Heidegger and Gadamer, interpretation is an ontological movement. An interpreter and an interpreted text cannot escape from “fore-structure”, “fore-conception”, “fore-understanding”, and “prejudice” [9, 10]. The purpose of interpretation is no longer to prevent misunderstanding. After acknowledging the ontological structure of interpretation, which is full of prejudices, the fusion of the horizon of the text and of the interpreter creates another horizon. Gadamer’s contribution to Hermeneutics is described by Ricoeur in three ways: 1) the phenomenological establishment of relationships between prejudice, tradition, and authority; 2) the ontological interpretation of prejudice, traditions, and authority in light of “the effects of history”; and 3) the disclosure of hermeneutics as “meta-critical consequence”, indicating that there is no point at which complete and absolute criticism is possible [6, p. 70-71]. Ricoeur also evaluates Heidegger and Gadamer’s hermeneutics as maximizing the generalizing and fundamentalizing movement begun by Schleiermacher and Dilthey, by disclosing the ontological features of Hermeneutics [6]. Ricoeur’s own hermeneutics begins from these background developments in Hermeneutics. Now, it is time to explore methods of two scholars, Paul Ricoeur and Ian Barbour who dedicate themselves to constructing their own bridge between the Humanities (Theology) and the sciences.

2.2. Critical hermeneutic of Paul Ricoeur

Ricoeur, who graduated from academic life as a student of existentialism and phenomenology under Gabriel Marcel, fully accepts the ontological hermeneutics of Heidegger and Gadamer. However, he does not accept their philosophy without criticism. In other words, although Ricoeur acknowledges the ontological features of interpretation, he does not think that any interpretation should directly run into Ontology. He does not take a short-cut, but makes a detour through Hermeneutics. “[W]ith respect to his intellectual peers, Gadamer and Heidegger, one notes as Ricoeur himself does, that his version of

hermeneutics is more indirect than theirs.” [11] Ricoeur asks three important questions in order to overcome the limits of ontological hermeneutics: First, is it possible for the interpretive movement to return from Ontology to Epistemology? Second, is truth really separate from method, as Gadamer suggested? Third, is it possible to relate ‘understanding’ to ‘explanation’?

Ricoeur asks these questions and gives his answers through dialogues with structuralism, psychoanalysis, and critical theory [6, 12]. This article concentrates on Ricoeur’s dialogues with critical theory, however, in order to make an effective comparison between critical hermeneutics and critical realism, the topic of the next section. Ricoeur applies a similar interpretation of ideology to the interpretation of structuralism and psychoanalysis. Unlike Gadamer, he always avoids an alternative and dualistic method, and attempts dialectic (not synthetic) encounters between hermeneutics (understanding) and other disciplines (explanation).

Ricoeur engages critically with Georg Gadamer and Jürgen Habermas in order to connect the field of understanding (the humanities) with the field of explanation (the Social sciences), and here Gadamer represents the Humanities and Habermas the Social sciences. Before linking them, Ricoeur points out their differences: Gadamer’s hermeneutics is distinct from Habermas’ critical theory in terms of purpose, resources, and the role of prejudice and ideology.

Unlike previous scholars of Hermeneutics, such as Dilthey, Gadamer acknowledges that in the Humanities, as “the historical-hermeneutic sciences”, it is impossible to reach a perfect interpretation of the writer’s original meaning. Rather, the purpose of Hermeneutics is “the renewal of cultural heritage in the historical present” [6], because of the ontological character of understanding. Ricoeur rightly states that “Hermeneutics is wholly engaged in *going back to the foundations*, a movement which leads from the epistemological question concerning the conditions of possibility of the human sciences to the ontological structure of understanding” [6, p. 48-49]. This emphasis on heritage and foundations leads Hermeneutics to rely on tradition, which is the source of Hermeneutics. The Humanities seek “the contemporary reinterpretation of cultural tradition” [6, p. 39], but are never able to escape from tradition. As part of his tendency to romanticism, Gadamer chooses voluntary respect for tradition, rather than attempting what he considers an impossible critique [6, p. 66-67]. For Gadamer, misunderstanding is inevitable in the interpretation of a text, because a person in any age and situation has a kind of prejudice. Prejudice is not something to be eradicated, but is a constitutive element of understanding. For this reason, an absolute criticism of tradition is impossible. Thus Gadamer advocates a ‘meta-critique’, in terms of which any criticism is always incomplete, because the hermeneutical movement cannot escape its ontological roots. This is why Gadamer seeks to detach his hermeneutics from a world of methodology which generally alienates a text from its ontological ground [6, p. 37-38]. He reveals only the impossibility of criticism, and is not able to offer a constructive critique of the way criticism can be considered possible in spite of its ontological limitations.

Meanwhile, according to Ricoeur, Habermas develops his own critical theory (called ‘the critical Social sciences’) from his reinterpretation of the Marxism of the Frankfurt school. The purpose of critical theory is to disclose (and offer liberation from) the oppressive and violent structures or interests hidden in knowledge, society, and history. The critique of ideology identifies “the technical or instrumental interest” of the ideology of Science and technology, and moves toward inter-subjective “communicative action” and “interest in emancipation” [6, p. 78-82], which, unlike Gadamer, Habermas does not seek from tradition, since the tradition is distorted by a certain ideology. Rather, as the resource for his critical theory, Habermas assumes “the ideal of unlimited and unconstrained communication” as “a regulative idea” and an eschatological world governed by “the revolutionary perspective of the end of violence” [6, p. 78-82]. While Gadamer considers misunderstanding a part of the ontological structure of interpretation, Habermas sees ideology as an obstacle to be abolished in order to reach the state of communicative action and emancipation.

Despite these differing points between Gadamer and Habermas, Ricoeur discovers some significant aspects in which their thought might be interconnected. Gadamer’s hermeneutics contains the possibility of moving from ontological hermeneutics to epistemological hermeneutics. For example, Gadamer’s ‘effects of history’ is applicable to Science, which has been considered an objective study. He asserts that “scientific research does not escape the historical consciousness of those who live and make history” [6, p. 76]. As will be shown in the next section, this statement is vulnerable to arguments from critical realism. Gadamer’s hermeneutics includes “distanciation” as a necessary method of the Human sciences, because the concepts of the “effects of history” and the “fusion of horizons” imply a distance between the past and the present, and different horizons of a text and its interpreter [6, p. 61-62]. Ricoeur also interprets Habermas’ concept of “interest” as itself hermeneutical, because “interest” can be compared with the “prejudice” and “fore-understanding” of ontological hermeneutics [6, p. 95-96]. Habermas’ interest in emancipation thus cannot be absolute. It belongs instead to the tradition of the Enlightenment and, furthermore, to the tradition of liberation, such as those of the Exodus and the Resurrection of Christ in Christianity [6, p. 99-100].

Furthermore, through applying the merits Ricoeur believes critical theory holds to his hermeneutics, he attempts to advance toward critical hermeneutics. He adds a ‘hermeneutics of suspicion’ to the hermeneutic discipline. Even though in his later philosophy Heidegger argued that one should listen to the words of Being [2, p. 542; 6, p. 58-59], this mystical approach might be dangerous, according to Ricoeur’s hermeneutic of suspicion. The language of Being cannot be transmitted other than through human languages and symbols, that is, human culture. This could lead to a distorted and oppressive structure because of the limitations of Dasein that Heidegger identifies. Shaking the repressive structure is initiated by disclosure of that structure. In order to do this, ontological hermeneutics is not enough. According to Ricoeur, epistemological hermeneutics and methodological ‘distanciation’ are needed, because an objective interpretation

with methodological detachment is necessary for criticism, even though ultimate objectification is impossible. This study facilitates the logic of explanation. Explanation is a necessary process in understanding. While resisting “the ruinous dichotomy, inherited from Dilthey, between ‘explanation’ and ‘understanding’”, Ricoeur states, “[I]f there is a hermeneutics...it must be constituted across the mediation rather than against the current of structural explanation” [6, p. 92]. Through the circulation of ‘distanciation’ and appropriation, and the epistemological hermeneutics of suspicion, he intends to advance to an ontological interpretation which is more holistic and critical [6, p. 94].

We can ask some questions here, however: why did Ricoeur limit his hermeneutics of suspicion only to the Social sciences? Why did he not include the Natural sciences as a conversation partner? In his article, ‘Science and Ideology’, where he deals with a dialectic between Social science and ideology, he distinguishes Social science from positivistic science [6, p. 232]. If so, is positivistic science the unique form of contemporary science? Does not natural science itself belong to the ontological structure? These questions lead us to a study of critical realism.

2.3. Critical realism in Science and Theology

Critical realism asserts that there is a reality in the world, but that a person is related to and mediated by reality indirectly through a perspectival lens and through various media, such as language and nature. This is unlike naïve realism (direct realism) which believes that one can perceive objects as they really are. Because one passes through mediating beings, critical thinking is required in order to reach reality [13]. This critical approach to reality has been in evidence since the twentieth century.

The rapid changes in twentieth century science have encouraged scientists and theologians to support critical realism. Einstein’s theory of relativity meant the concepts of absolute space and time changed. Time and space were no longer considered separate from each other [14]. Developments in Quantum physics replaced Newton’s classical physics. Heisenberg’s uncertainty principle showed that an object can be observed differently according to the perspective of an observer. Niels Bohr’s complementarity demonstrated that the same matter can be explained dissimilarly. For example, light can be considered as both wave and particle [14, p. 427-428].

In the meantime, the Philosophy of science was also transformed. Logical positivism, which emphasized logic and experiences but rejected Metaphysics, dominated the Philosophy of science until the first half of twentieth century [15]. Then Karl Popper’s ‘falsifiability’ and Thomas Kuhn’s ‘paradigm shifts’ became turning points in renovating the understanding of Science [16, 17]. Scientific theory is not truth in itself and does not reflect reality as it is. Any theory of Science can be discarded if a falsifiable proof is suggested. A theory also belongs to a certain scientific paradigm, which is destined to be changed in the historical maelstrom. While research in the history of Science and sociology of science has

evolved swiftly, there now exists the understanding that scientific theories, scientists, and specific paradigms are limited to historical conditions and might be subject to certain ideologies and class interests [14, p. 17].

The scholars of Hermeneutics discussed above seem not to have paid attention to significant changes in Natural science in the twentieth century. However, Ian Barbour, who has explored the constructive discourse between Science and Theology since the 1960s, has noted these scientific revolutions and believes these changes provide new inspirations for religion and Theology [18]. Barbour takes critical realism as an epistemological basis for the analogical relations between Theology and Science. Through critical realism, reality can be interpreted and reconstructed, because reality is indirectly mediated by various means such as symbol, metaphor, theory, language, and so on. With this critical realism, Barbour rejects: 1) ontological, epistemological reductionism that attempts to reduce religion to science; 2) ontological dualism or linguistic separatism that attempts an extreme separation between religion and Science; and 3) instrumentalist and positivist philosophies of Science [18, p. 4-5, 11-13; 19].

Following some philosophers of Science, such as Carl G. Hempel, Popper, and Kuhn, Barbour argues that science is a *theory-laden* and a *paradigm-laden* study based on the *hypothetico-deductive* method. It is not possible for a scientific theory to arise automatically from unconstructed experiments and observations. In the whole process of building up a theory, the establishment of hypotheses precedes experiments and observations. Setting up an appropriate hypothesis not only needs systematic discipline in Science, but definitely also needs the creativity, imagination, and inspiration of a scientist. An erected hypothesis is proved and assured through empirical elements such as various examinations and researches. Finally, the hypothesis is born as a theory after verification and investigation by groups of scientists [18, p. 32-34].

Barbour says that this process of forming a scientific theory is not much different from the process of forming religious texts and teachings. Instead there are analogical correspondences between Theology and Science. The formation of religious teachings and doctrines always starts from religious inspirations and revelations. These are then attested, affirmed, and developed by religious experiences and numerous followers and interpreters of the religion throughout history. Moreover, models, metaphors, and symbols play important roles in disclosing and mediating reality in both Theology and Science [18, p. 36-38].

In this respect, both Theology and Science, Barbour thinks, point toward reality and the truth. According to Barbour, they are not just constructed institutions which are only useful for human society, as the proponents of instrumentalism argue. Furthermore, Theology and Science are not just language games and do not have totally different systems of language that make it impossible to communicate with each other. Theology and Science search for one reality and truth. They thus have a companion relationship that leads them to interact mutually. Because reality is mediated by various theories, model, metaphors, and symbols, which are all part of human languages and cultures,

reflected and mediated products should be critically accepted. Barbour is thus a critical realist, as he acknowledges [18, p. 35, 43].

3. Conclusions - comparison between critical hermeneutics and critical realism

As discussed so far, critical hermeneutics and critical realism seem to have a similar aim, in that they both seek to discover truth and reality. In his book, *Theology after Ricoeur*, Dan Stiver describes Ricoeur as a realist, labelling Ricoeur's philosophy 'hermeneutic realism'. He compares Ricoeur's hermeneutics with critical realism: "Ricoeur points toward a reality claim, but one that is probably more imaginatively mediated than even most critical realists. His is a configured, hermeneutical realism that is chastened, liable to diverse interpretations and suspicion, but a realism nonetheless." [20]

However, the forms of critique which the two methods use are distinctive. Critical realism accepts various methods as useful in critically looking at reality in order not to repeat the fallacies of naïve realism. Those methods transcend the level of explanation as a basic task of Science and reach the level of understanding, namely Hermeneutics. Comparison between Theology and Science through models, metaphors, and symbols shows that critical realism already adopts hermeneutical thinking and methods. Critical realism also asserts that even though the theories and models that Theology and Science appropriate, mediate reality, the medium and the whole of reality are never identified. This assertion is certainly hermeneutical. Thus, I argue that the discourse of Theology and Science based on critical realism could be considered one of the hermeneutic movements of the twentieth century.

Meanwhile, critical method in Ricoeur's hermeneutics exists at the level of explanation. In particular, scientific features of critical theories are considered a necessary element in Hermeneutics. Explanation is not contrary to understanding. Rather, understanding can be variegated and enriched by explanation. Critical theories participate in the movement of a 'hermeneutics of suspicion' by their disclosure of oppressive structures and reality hidden in culture, mind, and society (class). If understanding passes through these critical movements, it is possible to reach a more mature and substantial "hermeneutics of belief" [20, p. 65].

The difference in the location of the critique leads this comparison into the possibility of the mutual complementarity of critical hermeneutics and critical realism. On the one hand, critical realism asks critical hermeneutics to deal not only with the Social sciences, but also with the natural sciences, as conversation partners in a Hermeneutics of suspicion. Recent studies in the Natural sciences have expanded to issues related to human nature and culture. Evolutionary biology is a good example here. According to evolutionary biology, human beings are only one species among several million in our seven-billion-year evolutionary history. Comparative research between humans and other animals has challenged conceptions of the characteristics and abilities that the humanities and Social sciences have previously assumed only human beings possess. For example,

primate studies have proved that some animals, much like humans, also have self-consciousness and their own culture [21]. Sociobiology considers humans to be just one of many social animals [22]. (Sociobiology is one of the biological disciplines that has attempted to explain social behaviours of social animals including human moral and cultural behaviour from the perspective of natural selection, more particularly, gene selection.) Biologists of symbiosis, using the concept of symbiogenesis, argue the human being has evolved through profound relationships not only with other animals, but also with other organisms and especially microorganisms such as bacteria [23]. (Symbiogenesis is a term combining 'symbiosis' and 'genesis'. As it indicates, symbiosis among organisms has caused physiological, morphological, and genetic evolution in evolutionary history. This theory has a different understanding of evolution from classical Neo-Darwinism, especially from a gene-centred perspective.) One can discover possibilities here for anthropocentrism to be criticized and overcome. Philosophical and theological reflection on these scientific studies could pave the way for scientific research to be used as a viable source of a hermeneutics of suspicion.

On the other hand, critical hermeneutics leads critical realism to the hermeneutic of suspicion. That is to say, critical realism is asked to deal with Social science positively. When a theologian who utilizes critical realism converses with Science, or when a scientist supporting critical realism converses with Theology (religion), discourse via the Social sciences might be an important link. In fact, just as Ricoeur excludes Natural science from his discussion of the hermeneutic of suspicion, the Social sciences have not been engaged much in the dialogue between religion and Science either. However, without analyses and explanations of the Social sciences, it is not possible to move towards a holistic interpretation of human culture, society and religion. One should not be satisfied with the hermeneutical character of critical realism. In other words, a hermeneutics of faith toward reality and truth is not a final stage. If an interpreter necessarily passes through the movement of a hermeneutics of suspicion, she or he will not make the mistake of uncritically accepting the truth claims of either Theology or Science. Therefore, dynamically relating critical hermeneutics with critical realism could contribute to more harmonious and enriched interdisciplinary studies of the Natural sciences, Social sciences, and Theology.

Finally, I have to mention some implications for the development of theological discourse and the reconstruction of theological doctrine from the methodological combination of critical realism and critical hermeneutics developed thus far. At first, it can be said that Theology is essentially an interdisciplinary study. Because Theology describes God — who creates, governs, and liberates the world — as its primary subject, other disciplines that interpret and explain the world need to be dialogical partners. Here both critical hermeneutics and critical realism can be useful and supportive methods for robustly turning Theology into an interdisciplinary field. This is because the two methods make creative and critical connections between the Natural sciences, the Social sciences, and the Humanities. Moreover, Ricoeur's critical hermeneutics

can help in showing how a theological discourse needs to be constructed. Critical hermeneutics discernibly discloses the movement of interpretation. It starts with Ontology and passes through Epistemology (critical interpretation), before arriving at ontologically qualified critiques. Even though critical realism can be considered an ontological project, because it pursues truth from the presupposition of reality, it does not clearly distinguish an ontological aspect from an epistemological aspect in its methodological movement. Critical hermeneutics thus seems to be better suited to this task than critical realism. Since Theology has an assumption of belief in God, and a subjective dedication to the Christian church, it should be worked out within its ontological dimension and should take into account its devotional prejudice. Theologians might not be able to reach theological truth if they fall into unconditional obedience to theological and Church tradition, or make the mistake of identifying the Christian tradition with Christian truth and God. Theology thus needs ideological criticism from critical social sciences. Many theologians, such as liberation, feminist, and ecological theologians, have reinterpreted theological traditions and reconstructed their discourses using critical studies and perspectives. This demonstrates the usefulness of critical hermeneutics, which has the character of a hermeneutic of suspicion. I also point out that Theology needs to look for research products which come out of the interactions between the Natural sciences and the Social sciences. These kinds of interactions occur in fields such as the sociology of science, where sociologists of science criticize the ideologies and powers hidden in the society of scientists [24]. Theologians need to be cautious about ideological distortions in scientific research when they attempt to practice theological reinterpretations through dialogue with any of the areas in Natural science, and need to take into account what the sociologists of science say. Just as critical hermeneutics admits Habermas' criticism against the modern ideologies of Science and technology, which are governed by "technical or instrumental interest" [6, p. 41], critical realism rejects instrumentalist and reductionistic philosophies of Science. Thus Theology cannot be considered compatible with either scientism or ontological reductionism, since both deny a metaphysical view of the world. With the help of both critical hermeneutics and critical realism, theologians therefore need to discern what scientific arguments intentionally or unintentionally assume in their reductionism and/or instrumentalism.

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Critical hermeneutics and critical realism in the dialogue between Science and Theology. theories, which are rigid, measurable, and assured by experiences and experiments, provided intellectual inspiration for modern philosophers. Although Rene Descartes and David Hume stood in individually different traditions, Descartes in rationalism and Hume in empiricism, both were evidently influenced by contemporary science. Descartes was influenced by "the clarity and certainty" of sciences such as Mathematics, Geometry and Algebra that he had studied in his earlier days [3]. Hume pointed out that "the In theology, the term critical realism is employed by a community of scientists turned theologians. They are influenced by the scientist turned philosopher Michael Polanyi. Polanyi's ideas were taken up enthusiastically by T. F. Torrance, whose work in this area has influenced many theologians calling themselves critical realists. This community includes John Polkinghorne, Ian Barbour, and Arthur Peacocke. The aim of the group is to show that the language of science and Christian theology are similar Critical realism is a name that a community of scientists turn theologians apply to themselves." The aim of the group is to show that the language of science and Christian theology are similar, forming a starting point for a dialogue between the two. Alister McGrath and Wentzel van Huyssteen (the latter of Princeton Theological Seminary) are recent contributors to this strand. Tom Wright, New Testament scholar and Anglican Bishop of Durham also writes on this topic as evidenced by