

## Analysis of Scientific Realism in the Dichotomy between Positivism and Anti-Positivism: An Implication for Social Sciences

**Volkan Doğan**

Department of Business Administration  
Faculty of Economic and Administrative Sciences  
Eskisehir Osmangazi University  
Eskisehir, Turkey.

### Abstract

*The aim of this study was to analyze scientific realism in the dichotomy between positivism and anti-positivism and to position this analysis on the epistemological axis. The study also aimed to demonstrate that scientific realism provides a more comprehensive explanation regarding the legitimacy of social sciences compared with positivism and anti-positivism. The results of this study suggest that, on the epistemological axis, scientific realism exhibits a closer stance to anti-positivism than positivism. In addition, since scientific realism analyzes metaphysical facts within the boundaries of science and social sciences involve metaphysics because of their nature, the study argued that scientific realism provides a more comprehensive explanation than other scientific approaches regarding the legitimacy of social sciences. Finally, the results reveal that there is a complex relationship between the axes of scientific evaluation suggested by Burrell and Morgan (1979).*

**Keywords:** Scientific realism, positivism, anti-positivism, social sciences.

### 1. Introduction

Many scientific traditions have been suggested throughout the history in order to examine social realities and deal with science. These scientific traditions are known to have their own frames of scientific reference in their approach to science. Burrell and Morgan (1979), who made an important contribution to the literature in comparing these scientific traditions with different scientific reference frames and collecting these scientific traditions in a single scientific map, suggested an approach to examine scientific traditions in ontological, epistemological, methodological contexts and in relation to human nature. Constructed based on the opposition between "Sociological positivism" and "German idealism", this approach is presented in the table below.

**Table-1**

<i>German Idealism</i>		<i>Sociological Positivism</i>
Nominalism	<b>Ontological Axis</b>	Realism
Anti-positivism	<b>Epistemological Axis</b>	Positivism
Voluntarism	<b>Human Nature Axis</b>	Determinism
Ideographic	<b>Methodological Axis</b>	Nomothetic

*Burrell and Morgan, (1979)*

In Table 1, "German Idealism" represents the subjective end and "Sociological Positivism" represents the objective end. Located on the ontological axis, nominalism represents the approach that concepts, words, descriptions, designs, and even languages spoken related to social reality have no existence, there is no reality independent of the individual's consciousness and reality is created by the individual themselves. On the other hand, realism, which is located at the most objective point of the ontological axis, represents the approach advocating the view that there is a reality in the universe independent of consciousness of the individual. Therefore, on the ontological axis, whether social reality is a product of the individual's consciousness or it is a fact which is independent of the individual is a controversial issue (Çiftçi, 2003). Located at the subjective end of the epistemological axis, anti-positivism suggests that social reality is relative and social realities cannot be explained without being involved in these realities. On the other hand, located at the objective end of the epistemological axis, positivism can be defined as an approach holding that regular and causal relationships should be established among the parts of the whole so that explanations can be made about social realities.

While voluntarism, which is on the subjective side of the axis of human nature, claims that the individual can keep the environment under control through free will, determinism, which is on the opposite pole of voluntarism, and treat the individual and their actions as a product of their environment. The ideographic approach, which is on the methodological axis, suggests that the individual needs primary data about the fact in question to understand the social reality and the fact needs to be analyzed in its own context. On the opposite pole of the ideographic approach, the nomothetic approach advocates that social reality should be investigated using a systematic process of research and scientific criteria including the establishment and testing of a hypotheses.

One of the aims of this study is to investigate scientific realism based on the dichotomy between positivism and anti-positivism on the epistemological axis and to position scientific realism on the epistemological axis with respect to the scene described by Burrell and Morgan (1979) through "German idealism" and "Sociological positivism". In addition, the study aims to demonstrate that scientific perspective of scientific realism provides a more comprehensive explanation regarding the legitimacy of social sciences compared to positivism and anti-positivism. Although the general initial tendency is to place scientific realism on the ontological axis, a technical distinction is thought to exist between positivists and scientific realists in terms of their scientific positions. In this regard, demonstrating that there is a complex relation between the axes of the scientific evaluation suggested by Burrell and Morgan (1979) is expected to provide a significant contribution to the literature.

## **2. Positivism and Anti-positivism**

### **2.1. Positivism**

Positivism regards the attempt to obtain predictive and descriptive information related to the social reality and the external world as the main purpose of science. For this attempt to obtain knowledge, positivism advocates the construction of theories of general propositions representing regular causal relationships. It also suggests that these theories of general propositions can be obtained only through systematic observation and experiment. For positivism, in other words, observation and experiment are the only source to obtain precise empirical knowledge (Keat and Urry, 1994). On the basis of positivism lies well-supported regularity. Obtaining definitive knowledge represents the basic attitude of positivism. In fact, on the epistemological axis, objectivist end represents the positivist epistemology (Çiftçi, 2003). Positivists regard scientific theories as general universal definitions. The truth or falsehood of these theories is tested through systematic observation and experiment. The results of observation and experiment mean absolute certainty for positivists.

Positivism suggests some arguments about the scope and limits of science. These arguments are based on the ideas that only observable (measurable) facts can be a subject of science and be assessed within the boundaries of science. It can be argued that this perspective of positivism gradually led to a hegemony on both natural sciences and social sciences. Indeed, at some point, people started to criticize many scientific approaches in terms of being positivist or not and ignored other arguments of these scientific approaches (Schlick, 1999). However, as a result of considering science by dividing into parts as natural sciences and social sciences and the large amount of criticism leveled against positivism over time, the hegemony of positivism began to shake.

The criticisms against positivism are usually based the fact that positivism includes only observable facts within the context of science and rejects metaphysics. In addition, rejection of metaphysics also means rejection of metaphysical reality (Schlick, 1999). As a result, positivists' focus on only observable facts within the scope of science implies that they aim to include only absolute (certain) facts in science. By observable (measurable) facts positivists mean facts that can be tested and allow for making right or wrong decisions about them. Therefore, positivists argue that scientific progress can be realized by means of testing hypotheses and these tests could only be obtained from observable (measurable) facts. From the positivist perspective, testing hypotheses should be conducted with a confirmative approach. Positivists claim that scientific progress will take place in a cumulative (inductive) way and with a confirmative approach. Thus, in positivism, scientific progress originates from observation rather than theory. Also, positivism adopts the inductive hypothesis testing process.

### **2.2. Anti-positivism**

Anti-positivism advocates that social reality and the world are relative and it is not possible reach conclusions and make inferences without being involved in this reality about social reality or social action. Therefore, anti-positivists argue that inferences about a social reality or social action cannot be made without having an internal perspective about that social reality or social action.

In this regard, according to anti-positivism, science does not consist of accumulation of objective knowledge (Burrell and Morgan, 1979). Also, it could be suggested that anti-positivists reject observer point of view in analyzing facts as a subject of science.

Anti-positivists claim that the exclusion of the individual from reality is the cause of social reality as a subject of science and the world as a fact is independent of the individual's mind (Çiftçi, 2003). The idea that reality as a subject of science may create different connotations from individual to individual and analysis of reality with systematic norms is contrary to the nature of reality reveal the epistemological perspective of positivists against anti-positivists. To sum up, the positivist and anti-positivist scientific approaches exhibit some contrasts on the epistemological axis. Based on these contrasts, anti-positivists' key criticisms of positivism are mainly about the idea that the positivist approach prevents obtaining a variety of knowledge and excluding non-measurable facts from the scope of science (Sargut, 2002).

### **3. Scientific Realism**

For the sake of describing the scientific position of scientific realism, it could be suggested that scientific realism and realism are based on the same principles. Indeed, just like positivists revised themselves as logical positivists in order to better respond to criticisms against them, realists revised themselves as scientific realists to better respond to criticisms directed at them. Nevertheless, a distinction between scientific realism and realism can be made based on the fact that realists argue absolute knowledge can be obtained through perceptions of observation while scientific realists claim that absolute knowledge cannot be obtained through perceptions of observation (Hunt, 2005). On the other hand, in all other respects, the arguments suggested about the position of scientific realism apply for scientific realism as well. In addition to being placed at the objective end of the ontological axis within the context of scientific evaluation by Burrell and Morgan (1979), realism is thought to be located on the epistemological axis as well. Realists acknowledge that a social reality independent of the individual's mind exists in the ontological context (Schlick, 1999; Hunt, 2005; Psillos, 2005; Psillos, 2009; Busch, 2012). At this point, they are in a contradiction with nominalists. Scientific realists do limit scientific subjects only to observable (measurable) facts and claim that some unobservable facts can exist within the boundaries of science (Chakravartty, 2011; Sargut, 2012). This implies that scientific realists take metaphysics within the boundaries of science.

On the other hand, what scientific realists mean by metaphysics is neither spirit nor miracle. By metaphysics, scientific realists mean the facts the effects of which can be observed but the existence of which cannot be observed. An example of these metaphysical cases is the case of gravity. The result, or effects, of gravity can be observed but gravity itself, or its existence, cannot be observed. Scientific realists regard gravity as a fact that can be a subject of science. In addition, scientific realists' inclusion of unobservable facts within the boundaries of science are thought to arise from their argument that observable and unobservable facts may not be distinguished from each other (Boyd, 1983). Scientific realists adopt an understanding originating from theory in the process of scientific progress. Therefore, scientific realists believe that observation is always dependent on theory (Peter, 1992). In other words, according to scientific realists, science involves a methodological process loaded with theory (Iranzo, 2008).

In addition, it could be suggested that scientific realists exhibit a close stance to hypothetico deductivism because scientific realists tend to put forward a theory first in the process of scientific research and then to test this theory for hypothetical falsification (Devitt, 2011). The scientific realistic approach, which is considered not to fully adopt Popper's falsification process, emphasizes that observation is needed to some extent when establishing a theory but then the theory accepted to be correct should be tested with a perspective of falsification. In this regard, Popper's falsification argument contributes, albeit slightly, to the progress of scientific realists in epistemological context (Özer, 2010). Scientific realism incorporates three different theses: metaphysical, semantic and epistemic theses. According to the metaphysical thesis, the existence of beings put forward by scientific theories is accepted and they can exist independently of the individual's mind. According to the semantic thesis, scientific theories' claims conditioned on fact should be understood properly as these claims provides a hypothetical realistic reference and guide in finding the truth.

The epistemic thesis focuses on scientific theories are thought to be mature and successful (Psillos, 2005). In fact, it is argued that these theories provide explanations closest to reality (Psillos, 1999).

In order to support scientific realists' predictions of theory which are considered to provide explanations closest to reality, Putnam (1975-1976) proposed "No Miracles" argument. "No Miracles" argument strengthens scientific realists' suggestion that "good theories are approximately true". As Putnam (1975-1976) puts it, "realism is the only philosophical approach that does not present the success of science as a miracle". In other words, since theories predict existing facts accurately, there is no place in science for miracles falling from the sky.

One of the most important foundations which scientific realists' perspective of metaphysics is based on is the concept of causality (McCall, 2011) because scientific realists believe that metaphysics exists in the nature of causality among facts. Metaphysics is also thought to be the reason for realists' opinion of causality among facts and their rejection of Hume's causality. Realists do not focus on causality among facts, like in Hume's causality, but they focus on the depth of causality among facts. In this regard, they argue that metaphysical facts, which exist in the depth of this causality, should be regarded within the scope of science. In summary, it could be suggested that, based on the theory considered to offer an explanation closest to reality in scientific research process, scientific realism includes unobservable or metaphysical facts as well as observable facts within the boundaries of science with a hypothetic deductive approach and an understanding of falsification similar to that of Popper's. Finally, the fact that scientific realists have an understanding of falsification close to hypothetic didacticism offers a description of scientific realism' epistemological approach (Psillos, 2010).

### **3.1. Scientific Realism and Positivism**

As mentioned in the previous parts, even though scientific realism and positivism hold a similar position on the ontological axis, they exhibit some differences on the epistemological axis. Indeed, the claim that the controversy between positivists and scientific realists is not an overall but a technical discussion supports this observation. In this regard, scientific realists regard science as an attempt to define unobservable structure and mechanisms by means of a model or theory in addition to making inferences about observable facts. In this sense, the primary objective of science for scientific realists should be to explain structure and mechanisms related to unobservable facts through models and theories.

Positivists, on the other hand, see science as a demonstration of the regular causal relationships among observable facts in an inductive way and through observations. In this regard, it is clear that positivists deal with only observable facts within the boundaries of science. It could be suggested that the technical controversy and disagreement between scientific realists and positivists are based on unobservable facts and Hume's concept of causality. In addition, in the process of scientific progress, scientific realists start with theory whereas positivists start with observation and experiment. There is a distinction between positivists and scientific realists with respect to metaphysics on the discussion of unobservable facts (Worrall, 1982). Although scientific realists consider metaphysics as a phenomenon that may be the subject of science, positivists retain metaphysics out of science. Perhaps this is why positivists reject the philosophy of science because for positivists there is no need for the philosophy of science and science is limited to observable facts.

Scientific realists' understanding of metaphysics involves finding answers to the questions "What's out there? What does it look like? For example, one does not need to see a tree blown down in the Amazon jungle to make an ontological comment about that event. In this case, how sensible would it be to reject the existence of a fact? ... This example shows how scientific realists deal with metaphysics. In other words, the problem is not about metaphysics but about the way metaphysics is used. In fact, as Hunt (2005) states as well, positivists do not reject metaphysics, or metaphysical beings, but they just argue that metaphysics cannot be a subject of science. Positivists' limitation of the scope of science to observable beings may also imply that the scope of science is actually limited to the observation skills of the observer. Boyle (1999) and Schoen (2002) state that the observer's ability to observe may be restricted by God and, in this case, some existing facts that may be a subject of science may be excluded from science with the positivist scientific attitude. At this point, it could be suggested that scientific realism has a more inclusive attitude towards science than the positivist view of science. Also, if a fact that cannot be observed by the observer has an explanation effect on an observable fact, it could then be argued that this metaphysical phenomenon exists as (Pierson and Reiner, 2008).

In fact, in this case, the existence of an existing fact is rejected unfairly and that fact may result in a significant improvement in the name of science. Regarding the discussion of positivism and scientific realism with respect to Hume's causality, it may be useful to begin with the fact that positivism is based on Hume's causality.

Hume's causality is an approach that is focused on formulating regular causality relations between facts. Although scientific realists do not completely deny Hume's causality, they assert that its level of explanation is shallow. Scientific realists argue that the depth or detail of regular causality relations between facts has been overlooked in Hume's causality approach. In this regard, adopting Hume's causality, scientific realists advocate that positivists seek an answer to question of what in the scientific process and they are the ones who look for an answer to the question of how. Positivists focus on the fact that the cause is prior to the result. On the other hand, scientific realists focus on the nature of the process of cause and effect. Also, scientific realists argue that, in some cases, there may be metaphysical facts, or facts that cannot be measured, in depth of the process of cause and effect.

In fact, these facts should be considered within the boundaries of the science. In this regard, the concept of metaphysics should be considered carefully so that the boundaries of science can be determined (Choi, 2011). Finally, this study will try to analyze positivism and other scientific approaches based on Putnam's (1975-1976) "No Miracles" argument and discuss scientific realists' claim that the theory represents reality approximately and then this situation will be described with the case of footsteps, which adds to the uniqueness of this study. "No Miracles" argument can be taken as an argument which reinforces the scientific stance of scientific realists. In the hypothetico deductive falsification process, which is based on scientific realists' assumption that facts described by the theory are accepted as close to reality (Chakravartty, 2004), the state of not finding a result that is not foreseen by the theory shows that there is no miracle in science according to their approach. Besides, as long as related theory hypotheses are proved, or if they are not falsified, these theories are accepted as close to reality by scientific realists (Psillos, 1996).

In contrast, positivists do not have a theory at the beginning as they perform scientific research process based on observation. In this regard, a comparison of positivism and scientific realism can be illustrated by the case of footsteps. In this example, we assume that an individual in the corridor of 6th floor of a nine-storey apartment building hears footsteps of a cat that goes up from the 2nd floor. In this example, the apartment building represents the limits of science, the individual on the 6th floor stands for observer (scientist), and the cat going up from the 2nd floor represents metaphysical fact. The individual on the 6th floor hears the sound coming from the floor below, but the individual does not know that the sound is caused by the cat because the individual does not see, in other words observe, the cat. In this case, in the positivist approach, a statement about the presence of a cat cannot be made; even the presence of the cat is doubted since it cannot be observed by the individual on the 6th floor.

On the other hand, in the scientific realist approach, the presence of an unknown phenomenon that is not determined to be a cat is accepted as the footsteps of the cat is heard and a close to reality theory is presented. Assuming that this theory is based on the idea that "the sound that can be heard belongs to an animal that is going up", it can be argued that scientific realists has a more predictive approach than positivists. In fact, according to this illustration, a scientific realist scientist can behave in a more predictive way than a positivist scientist on unobservable metaphysical facts with observable effects. Also, since determining that the sound comes from the cat, that is from a metaphysical fact, might have a significant impact on scientific progress, it can be said that scientific realists are one step ahead compared to positivist scientists with respect to scientific progress.

On the other hand, when the case of footsteps is changed and the cat going up from the 2nd floors enters an apartment on the 4th floor, positivists end up not accepting the existence of a real fact. This is because the cat will never go up to 6th floor, and, in positivist perspective it is ontologically non-existent as a metaphysical fact. However, assuming that the observer on the 6th floor in the same case has a scientific realistic perspective, the cat is accepted as real even if it never goes up to the 6th floor, and the observer presents again the closest to reality explanation by revising his theory to "the sound belongs to an animal which goes up but enters an apartment below 6th floor" in a scientific realistic perspective. What is aimed by presenting the case of footsteps is not to praise scientific realism or criticize positivism. It is just mentioned to show that, as in the case of gravity, including the facts which have observable effects but considered metaphysical as their existence is unobservable, within the boundaries of science can contribute to scientific progress.

### ***3.2. Scientific Realism and Anti-positivism***

According to anti-positivism, which is placed opposite positivism on the epistemological axis, social reality is relative.

Indeed, anti-positivists, who advocate that the facts which may be subject of science are also relative and may be interpreted differently by each person, argue that science is not composed of an accumulation of objective knowledge (Burrell and Morgan, 1979). Scientific realists disagree with anti-positivists as they argue that science is an accumulation of objective knowledge and it is a social reality independent of the mind of the individual. Although positioned on different axes as ontological and epistemological axis by Burrell and Morgan (1979), scientific realists have a very different approach from anti-positivists on the epistemological axis as well. Anti-positivist approach to science is similar to the saying from the Talmud, which includes the Jewish civil law, ceremonies and legends: "We do not see things as they are; we see things as we are". Anti-positivists emphasize the importance of the individual in the role of observer in scientific process. In fact, they even argue that scientific process takes place completely under the influence of the observer. Positivists' claim that scientific knowledge is achieved only through observation and scientific knowledge is limited to observation brings out the fact that scientific knowledge might be affected, albeit slightly, by the individual's capacity to perform this observation.

In other words, positivism argues that, even if in a small amount, the observer effect may be involved in scientific process. On the other hand, the fact that scientific realists do not restrict science only to observable facts and set forth hypotheses in order to identify the mechanisms related to unobservable facts indicates that science covers facts far beyond the senses of the observer as well. In this regard, scientific realists go beyond Burrell and Morgan's (1979) epistemological axis to stand at a point closer to anti-positivists than positivists on the epistemological axis.

### ***3.3 Other Criticisms against Scientific Realism***

Scientific realism has been criticized by not only by positivists and anti-positivists but also by several other scientific approaches. Scientific realists argue that successful theories are close to reality. Anti-realists criticize this argument by questioning how a theory can be proved. Realists react to this criticism with "correspondence theory of truth". According to "correspondence theory of truth", the more a proposed hypothesis is related to truth and the more it corresponds to truth, the more accurate it is (Leeds, 2007). Another argument put forward to refute scientific realism is the "pessimistic induction" theory. According to this argument, if successful theories of the past can be falsified in time, suggesting that the successful theories of today are close to reality is misleading (Psillos, 1996). The goal of this argument is to confute the approach stated as "good theories are close to reality", which constitutes one of the foundations of scientific realism. Scientific realists accept good theories as close to reality rather than absolute reality since they believe that facts constantly change and new facts or truths wait to be discovered (Hibberd, 2001).

Scientific realists are involved in the discussions on whether scientific progress is continuous or discontinuous. Scientific realists advocate that science makes progress through discontinuous, or radical, change and that self-renewal of a theory requires that it presents an explanation that is closer to reality (Harker, 2010). In fact, this argument of scientific realists is parallel to Kuhn's (1970) abandonment of the paradigm approach. In fact, he criticized scientific realists, who argue that the progress of science is discontinuous and it is realized through radical changes, for non-measurability with respect to self-renewal of theory. Scientific realists respond to this criticism with Kuhn's (1970) metaphor of normal science. In other words, scientific realists assert that the former theory and the new theory can be compared by means of normal science and, therefore, it can be proved that the new theory provides a closer to reality explanation than the former theory. In this regard, scientific realists see the purpose of science as creating increasingly closer theories to reality to determine truth (Sankey, 2009).

### ***4. An Implication for Social Sciences***

The theories of scientific realists and other scientific approaches were examined over general rhetoric of science in the previous parts of the study. This part will address science in separate parts as natural sciences and social sciences in order to provide some implications for social sciences. The Gulbenkian Commission's (2008) report on restructuring social sciences suggests that scientists carrying out research in social sciences cannot be fully objective in the research process. As it can be understood from this claim, social sciences differ from natural sciences because of their nature. Although natural sciences offer researchers many variables that can be kept under control over facts, due to its dynamic nature, social sciences offer researchers many variables that cannot be kept under control. The subject of social sciences is the human being and the number of variables that can be taken under control regarding the human being is thought to be very limited.

A plant that is a subject in natural sciences can be examined from different angles by manipulating many variables in a closed experimental environment. However, it is extremely difficult to study a person that is a subject of social sciences in an experimental environment. In this regard, the arguments of a scientific approach may not present equally efficient explanations on natural sciences and social sciences.

Hence, positivism, or the hegemony of positivism, which has been seen as the dominant scientific approach since it was introduced by August Comte (Schlick, 1999), may still be providing the most comprehensive explanations in natural sciences, but it does not mean that it provides the same comprehensive explanations for social sciences. If social scientists eliminate the hegemony of positivism and reconsider the criteria to become a science or to become a subject of science, it might be useful for social sciences. When science is divided into two parts as social sciences and natural sciences, the density of metaphysics is thought to be more in social sciences than it is in natural sciences. This suggestion will be supported with some explanations, which adds original value to this study. Some abstract facts related to mankind such as, perception, orientation, attitude and commitment are regarded as research subjects in social sciences. Thus, the data obtained from the sample by means of some psychometric scales that are used to measure these facts is analyzed and interpreted through statistical programs.

In this regard, the level of explanation for the studied facts is determined as a result of analyzes that are performed on the data. As a result of the review of the literature, albeit limited, which was carried out on human and social sciences, it was found out that in no study 100% explanation of the facts investigated was achieved. In fact, it was found out that different researchers set various explanation limits. If these findings are evaluated from the philosophy of science perspective, not from the statistical perspective, it is thought that not reaching 100% explanation can be explained by representative quality of the sample and existence of several variables that cannot be taken under control as well as metaphysical facts. In this regard, scientific approach of scientific realism, which claims that unobservable metaphysic facts exist in the nature and in depth of causal relations and observation ability of the observer may be insufficient to detect these metaphysical facts, makes a deeper and more meaningful explanation of the nature of social sciences than positivism does.

In addition, regarding the scientific legitimacy of social sciences, scientific realism provides a better opportunity of legitimacy for social sciences than positivism. Also, dealing with metaphysics within the boundaries of science is an important issue regarding the scientific legitimacy of social sciences. Moreover, the actual aim of the philosophy of science that is not acknowledged much by positivists (Kitchener, 2004) is to position metaphysics within the boundaries of science. Indeed, as Suppe (1977) suggests, philosophy of science must cover metaphysics.

Finally, trying to come up with an absolute theory on facts that are subject of social sciences and social realities and using Hume's causality approach to assert that each identical cause precedes the identical result leads to the mistake of dealing with social sciences like natural sciences and problem of approaching social sciences in a way that is against their nature. Therefore, scientific realists' argument that successful and mature theories are not absolute but close to reality seem to comply with the nature of social sciences. To sum up, these points support Bunge's (1993) suggestion about scientific perspective of scientific realism and indicate that scientific perspective of scientific realism provides more convenient explanations for social sciences than positivism and other approaches do.

## **5. Conclusion**

Since the hegemony of positivism began to shake, arguments have been put forward to assert that the theories suggested by the scientific reality offer more comprehensive explanations especially for social sciences than positivism does. However, the aim of this study is not to follow the scientific trend to ruthlessly criticize positivism and praise scientific realism. This study tried show that scientific realism offers more reasonable explanations for social sciences than positivism with the distinction between social sciences and natural sciences. Today, although scientific realism does not attract scientists' attention as much as positivism (Duran, 2005), modern scientists of the future might make their most important contributions to scientific progress with scientific realistic approach (Andreas, 2011). Indeed, this idea can be supported with the view that social sciences may not present absolute data due to their dynamic nature and the theories of scientific realists demonstrate consistency (Hacking, 1999). Positioning scientific realism on the epistemological axis, this study tried to demonstrate that scientific realism presents an approach closer to anti-positivism than positivism.

When this dimension of the study and MacLennan's (2001) argument that scientific realism is positioned between positivism and realism are considered together, it can be suggested that Burrell and Morgan's (1979) axes of scientific evaluation are not separate as they are thought to be. Indeed, this study suggests a complex relationship between scientific evaluation axes proposed by Burrell and Morgan (1979). With the case of footsteps, this study discussed the impact of dealing with metaphysical facts within the boundaries of science on scientific progress. Also, in addition to being the scientific approach with the best explanation, having the most proactive explanation in scientific progress is thought to be an important feature. In this regard, it can be argued that scientific realism, which deals with metaphysics within the scope of science, has a more visionary attitude than positivism with respect to scientific advances. In addition, this study examined the distance between scientific realism and anti-positivism in the context of scientific approach as a contribution to the literature in which the relationship between scientific realism and positivism was studied (Schlick, 1999). Finally, as its most important implication, this study suggests that scientific realism can provide more comprehensive explanations compared to positivism with respect to the scientific legitimacy of social sciences. In fact, this significant implication is parallel to the suggestions by Bunge (1993).

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