CAURIENSIA, Vol. XV (2020) 755-770, ISSN: 1886-4945 – EISSN: 2340-4256

Doi: https://doi.org/10.17398/2340-4256.15.755

DO WE NEED A THEOLOGY OF SCIENCE?

¿NECESITAMOS UNA TEOLOGÍA DE LA CIENCIA?

MICHAŁ OLEKSOWICZ
Nicolaus Copernicus University

Recibido: 08/10/2019 Aceptado: 22/12/2019

ABSTRACT

In this article we discuss the specificity and importance of the idea of theology of science proposed by the philosopher and theologian Michał Heller. The salient features of the definition of this discipline are summarily reconstructed, explaining the main themes that the theology of science would deal with and presenting some objections to this definition. It is emphasized that the theology of science, especially in the case of the contingency of the world and of its intelligibility, can consider the limits of the empirical method. Moreover, methodological aspects of the discipline are discussed in the context of different representations of the science-theology relationship, highlighting the scope and the limits of the theology of science. Above two approaches are analysed: the methodological model of separation (isolationism), and the anti-separationist model (interactionism). It is noted that the theology of science could be a particular type of inductive metaphysics, which works on scientific and theological extrapolations. Therefore, in the theology of science, the special task for philosophy would be making more clear the speculative space within which to carry out the mediation between science and theology. At the end some epistemological observations and proposals are made for the further development of the discipline. All this would imply the need for the elaboration of hypothetical theology that would help in the study of the new theological problems.

Keywords: Theology of science, isolationism, interactionism, science-theology relationship.

RESUMEN

En este artículo discutimos la especificidad e importancia de la idea de la teología de la ciencia propuesta por el filósofo y teólogo Michał Heller. Se reconstruyen sumariamente los rasgos más destacados de la definición de esta disciplina, explicando los principales temas que trataría la teología de la ciencia y presentando algunas objeciones a esta definición. Se hace hincapié en que la teología de la ciencia, especialmente en el caso de la contingencia del mundo y de su inteligibilidad, puede considerar los límites del método empírico. Además, los aspectos metodológicos de la disciplina se examinan en el contexto de diferentes representaciones de la relación entre ciencia y tecnología, poniendo de relieve el alcance y los límites de la teología de la ciencia. Se analizan dos enfoques: el modelo metodológico de separación (aislacionismo) y el modelo antiseparacionista (interaccionismo). Se señala que la teología de la ciencia podría ser un tipo particular de metafísica inductiva, que trabaja sobre extrapolaciones científicas y teológicas. Por lo tanto, en la teología de la ciencia, la tarea especial de la filosofía sería hacer más claro el espacio especulativo en el que llevar a cabo la mediación entre la ciencia y la teología. Al final se hacen algunas observaciones y propuestas epistemológicas para el desarrollo ulterior de la disciplina. Todo ello implicaría la necesidad de la elaboración de una hipotética teología que ayudaría al estudio de los nuevos problemas teológicos.

Palabras clave: Teología de la ciencia, aislacionismo, interaccionismo, relación ciencia-teología.

I. INTRODUCTION

Some authors pay attention to the fact that modern theology follows the growing specialization of the various disciplines (e.g. theology of liberation, of ecology, etc.), which could lead to the risk of depriving theological reflection its proper content (Roszak 2014; Woźniak 2007). In this context, we will consider the value and necessity of the idea of theology of science proposed by Michał Heller (Tarnów, 1936-), a polish philosopher, who is known as a physicist and cosmologist, but also as a philosopher of nature, physics and as well an expert in the field of *Science and Religion*. He received the Templeton Prize in 2008 (Heller 2008a).

The problem of establishing what type of relations exist between theology and science is a very serious one which has been present in European thought for many centuries. Considering the high degree of interest in the empirical-mathematical and technological sciences in Western culture, it can also be defined as existential, because of splitting the intellectual life into two polar groups: humanistic and scientific. In fact it seems that we are now far from those epochs in which theology dominated (guided) other disciplines. Today it seems that theology and science often demarcate their areas of research by professing "a pact of non-intervention". This situation probably arose due to the strong criticism (starting from modern times) of that intermediary between science and theology which had before been represented by metaphysics (Koyré 2018). Consequently, if theology and science remain separated, this discord requires a type of reflection especially from philosophy and science-engaged theology. As emphasized by Lambert, philosophy can and should play the role of the hermeneutics of scientific results that traces the common ground between science and theology, exploring the boundaries of concepts and making them usable within theology (Lambert 1999, 126-130; Lambert 2002, 13-15).

This paper contends that the analysis of scientific realism can uncover implications for the theology of science program as proposed by Michał Heller. The starting point is the ongoing lively debate between realism and antirealism amid the philosophy of science. It is beyond the scope of this paper to discuss in detail the various problems linked to this debate, but it is sufficient to note that, according to the core idea of many philosophers of science, continuous development of science would speak towards a realistic interpretation of scientific theories. It is commonly thought that the most powerful argument towards scientific realism is the *no miracles argument*, "according to which the success of science would be miraculous if scientific theories were not at least approximately true descriptions of the world" (Ladyman 2014). Despite the *underdetermination* argument, frequently quoted as providing a basis for scepticism towards the unobservable entities theory, probably the strongest arguments against scientific realism are so called historical objections, of which the most widely known is the pessimistic meta-induction (Pietsch 2011). Ontological discontinuity, seen in consequent scientific theories, seems to give the foundation not only for mere agnosticism but for a positive belief, i.e. that many of the core theoretical terms of today's scientific theories will be considered obsolete in the future. This is an induction-based reasoning that our current best theories will be substituted by new theories and consequently, some of the core theoretical terms of today's best theories will be substituted by others. That is why the question of approximate truth discovery and an ontological

reference of theoretical terms from our best current theories would be subjected to doubt (Alai 2017).

Even if there is no unanimous agreement on the "form" of realism among those who defend standard realism in the face of historical objections, some form of philosophical (or theological) realism could remain undisputed by the theory of discontinuity. On the other hand, science-engaged theology is interested in the issue of realism, because in the theological perspective, the world is God's work and in some way it reflects God's goodness and wisdom (Strumiłowski 2019). It seems that because in the context of contemporary philosophy of science, the problem of ontological discontinuity of scientific theories is widely discussed, one would need a possible heuristic role for the theology of science in this debate. In other words, the theological attempt to complete a philosophical discussion around the problem of temporality of science, would be based on some theological assumptions deriving from the understanding the world as the Work of God and on the analysis of the ontological image of the world present in the philosophical and theological thought. Thus in this context arises a question about the principal theological/philosophical assumption of rationality of science and the world (Heller 2006).

II. THE THEOLOGY OF SCIENCE

1. FOUNDATION OF DIALOGUE

In the light of the above mentioned "pact of non-intervention" and opportunities that are arising from an ongoing lively debate between realism and antirealism amid the philosophy of science, it should be noted that, according to Heller's philosophy, theology and science have always been intertwined and the strong demarcation between them had, as history shows, a negative effect on both (Heller 1987a; Heller 2008b, 21-23, 49-53; Heller 2014, 41-120; Pedersen 1990, 139-160; Pedersen 1997). As a common denominator for the possibility of dialogue between the disciplines, Heller considers the question of rationality, or the mystery of the intelligibility (comprehensibility) of the world (Heller 2015a).

It can be noted that from the theological point of view, the created world is impregnated with a sense (meaning) and values. To avoid confusion, Heller proposes that we use the term "meaning" in reference to linguistic expressions, and the term "sense" referring to extralinguistic objects. He explains that we ascribe sense to objects ("sense for someone"), where sense becomes a type of

value (with certain epistemic aspect). Heller points out that mathematical structures have a syntactic meaning, but when they are used for modelling the world they also evoke a semantic sense. We can therefore speak not only of the sense of certain models, but also of the sense of whole theories. In this way, scientists can speak of the harmony or beauty of mathematical structures, or indeed, of all science. Because theories address some aspects of the world, one may also speak of the sense of the Universe. This sense would consist in the harmony of the world and in the fact that the world can be studied by the mathematical method. Heller points out that his reasoning is two-fold: 1) we attribute to the world sense on the basis of the empirical method; 2) the universe looks like a harmonious Totality, which is knowable. Moreover, Heller shows that in our days there is a widespread debate on epistemic values in science (e.g. consistency, concordance with empirical data, simplicity, mathematical elegance). However, in the theological perspective, this sense and these values would find their foundation in the divine *Logos* (Sense) (Heller 1997; Heller 2007; Heller 2008b, 168-208). We note that all science is based on the idea of some kind of rationality and stability of nature. Thus it seems that the theme of *Logos* and rationality can create bridges between the sciences and theology/ philosophy.

Even if Heller does not address in any deep way the philosophical problematic of sense and values, it seems that the proposal of Lambert, with his idea of the articulation of theology and science on the ontological (where the key concept would be the final cause and the problem of being), epistemological (with the central question of metaphysical presuppositions of science and the search for unity and the sense of nature) and ethical level (the critical reflection on the ethical implications of scientific activity) (Lambert 1999, 106-125), could be seen as the right direction to continue what Heller first outlined. In this way theology could "help to interpret the intelligibility of nature as a sign of a gift received, a manifestation of its very purpose: to understand that unique is the Foundation of what is visible and invisible, that unique is the reference to a Subject in relation with the Cosmos" (Marcacci 2018a, 163).

2. THE CORE IDEA OF THE THEOLOGY OF SCIENCE

Michał Heller presented the foundations of the theology of science project in his book *Nowa fizyka i nowa teologia* (Heller 2014, 150-154), based on ideas which he formulated in the 1980s. In fact, the first publication that explained this concept was the post-congress text of his friend and collaborator Josef Życiński, after the Second Interdisciplinary Seminary at Castel Gandolfo in

1982 (Życiński 1984, 85). Basically, Heller describes theology of science as a theological afterthought on sciences, which would examine consequences of the fact that empirical sciences research the world created by God.

In the starting point of his thought, this polish cosmologist emphasized that the universe of science is merely a part of the universe of theology, which means that the material world, from a theological perspective, is richer than the same world as seen from the perspective of empirical sciences, because theology can make statements on the "material world" which do not fit within the limits of empirical method. This means that the theology of science should look at science through the eyes of a well-informed theologian. Theology of science should be a part of the theology of values (sense), and use results from the philosophy of science. It would not have a directly apologetic character, but would rather aim at the enrichment of the perception of science, taking into consideration those aspects that are only visible using the theological method (Heller 2015b, 13-18; Heller 2016, 311-312).

Therefore, as suggested by Szczurek, one can describe the theology of science as a theological discipline which interprets scientific research results, as developed by philosophy of science, in the light of details of Revelation and the final objective of man (Szczurek 2015, 133-134). As a consequence, the material matter of theology of science would be the existence of sciences, their basic tenants, methods and results; its formal matter – relation of such defined object with transcendence, the meaning that results from it concerning God and man. Bugajak clarifies that the project of the theology of science would be an attempt to refine and deepen a discourse present in a field called *Science and Religion* (Bugajak 2015, 145-146). This deals with pointing out implications that the content of scientific theories can bring towards theology and religion. Meanwhile, a theology of science would be a theological reflexion on meta-objective aspects of science among which one can be described as methodological (way of practising science) and the other one as "existential" (the fact of existence of science as a way of gaining knowledge).

On the way towards the implementation of this discipline, remarks from Dadaczyński are particularly helpful (Dadaczyński 2015, 76-79). He lists some elements characteristic for the theology of science. Firstly, the theology of science embraces the assumptions of theology (i.e. it refers to theological sources pointed out by Melchior Cano) and if it is articulated in a catholic environment, it is to be supervised by the Magisterium of Church. Secondly, it is a reflection performed at a meta-level. The need to perform a theology of science on meta-scientific level results from the fact that on such level one can

reflect on some of the aspects of scientific cognition. This level can be conceived of as supplementary to philosophy of science in its ontological layer. In fact, since science uses mathematical and empirical methods and theology uses natural language, this means that statements from science are not directly transferred onto a level of theology of science but can be subject to philosophical analysis from within a theology of science. Thirdly, it is advisable to assume that a theology of science will provide a fresh view on certain problems, rather than attempting to build a new theological system. It may be necessary, in analyses of theology of science, to call upon theological hypotheses.

3. THE FUNDAMENTAL ISSUES OF THE THEOLOGY OF SCIENCE

As highlighted by Heller, the philosophy of science analyses the limits of possibilities for empirical inquiry, but due to its nature, it cannot transcend these limits. Meanwhile theology of science, especially in the context of the two features of the world, would be able to look at the empirical limits from the other side so to speak, the side not accessible by sciences. The first of these features is the contingency of the world, that is, its existence as being dependent upon the Creator. The other one is the fact that world is full of values in regard to which empirical method is generally insensitive.

As pointed out by Heller, if the key issues investigated by theology of science should be the issue of theological concept of the creation of the world (Heller 1987b; Heller 2014, 157-161), a question then arises on how the theology of creation, which undoubtedly uses metaphysical models for expressing content of the Revelation, could be enhanced by calling upon the scientific data? Although theology is a reflexion on the content of the Revelation and not on science, such reflexion has to be performed in the context of understanding created by science. Moreover, if theology is supposed to have an anthropological value, it cannot resign from dialogue with science, which is one of the necessary conditions for understanding man. Since previous metaphysical enquiries were based mainly on common experience, it seems that in the context of the development of science which touches subjects like the ontology of quantum and sub-quantum areas, there is a need for new reflections regarding current metaphysical views.

Moreover, the problem of the rationality of the world, which is the feature that enables rational research, is strictly connected to the theology of creation. Theological reflection can investigate this question on its own, although a theology of science can be introduced in order to undertake the subject of "God's plan" in the creation, which is fundamental for theology of creation.

The problem of the rationality of science is closely linked to the previous issue of the rationality of the world. In other words, it seems appropriate that the theology of science tries to answer more explicitly the question "why should we do science?". From the theological point of view, man is a mortal being, but called to eternity, so theology assigns to man a certain teleology of existence (salvation). This is why theology can formulate certain teleological judgments on science. Science plays an auxiliary role for man, that he may dominate the earth (Genesis 1,28). It seems, therefore, that the main objective of science is not only to know the truth as such, but also to rule the world (pragmatic aspect) (Olszewski 2015, 98-99).

III. DISCUSSION

1. METHODOLOGICAL COMMENTS

In this section various representations of the science-theology relationship will be reviewed by highlighting the scope and limits of the theology of science (Russell 2002). Polak, in his discussion of the method of theology of science, in reference to Barbour's classic systematization, suggested that in case of theology of science, it is relevant to analyse two approaches: methodological separation model (isolationism) which assumes a methodological difference between theology and nature sciences which results in the independence of both sciences; and anti-separationistic model (interactionism) which hopes to create a theological method which would accept some of the elements of nature sciences method (Barbour 1997, 77-136; Polak 2015, 25-29). In case of the program of theology of science, two essential questions arise: how is it possible to break barriers between the disciplines (discordism) and how is it possible to avoid extreme integrationism (concordism)?

From an interaction point of view, Heller and Życiński maintain the existence of a common ground between theology and nature sciences. According to Heller, theology and science have the same area of interest, the Universe, however they see it in a different way. As such, science would act as *locus theologicus*, pointing to interconnection between theology of science and science. Moreover, theology of science would show the world as existing through dependence upon the Creator and allow for approaching its axiological dimension. According to Polak, Heller did not clarify why the reflexion upon values should be done by theology and not by philosophy. In other words, is it, according to Heller, only theology that can deliver substantiation of axiology of nature? (Polak 2015, 29-35).

Macek proposed an interpretation of the program of theology of science in an interdisciplinary spirit (Macek 2010; Macek 2011). For Życiński, who assumes an anti-separationistic view, the area of integration should be philosophical reflection, which points to transdisciplinary activity. It is hard to ascertain whether Heller's view of theology of science is more similar to multidisciplinary or interdisciplinary action (Polak 2015, 35-40).

Turek, on the other hand, describes Heller's views as efforts towards assimilation of theology as a science, both in terms of research methodology and conceptual apparatus, as well as standards of cognitively valuable knowledge (Turek 2001). Turek, unlike Heller, looks for an opportunity to guarantee the impact of the natural sciences on theology, at the same time assuming their epistemological and methodological separateness. According to Turek a confirmation of the separatist vision can be seen in the success of the natural sciences, that is to say, in the process of growing autonomy of different knowledge disciplines at the beginning of modern times. Polak suggests that from the standpoint of the separation model, we have a number of reasons to not sacrifice a well-developed methodology. Indeed, there is no already formulated and tested method that could replace the current one and the choice of an unverified methodology instead of a well-functioning one does not seem justified. Moreover, overcoming the barriers would perhaps mean resuming the physical-theology program and the risk of the argument "God of the gaps" (Oleksowicz 2014).

Polak clarifies that the theology of science in separationistic spirit would be a specific philosophical meta-reflection on science and theology. It would therefore be part of philosophy, but its subject matter would come both from theology and science and its goal would be to come up with bridging interpolations, connecting views of the worlds of science and theology. It would be a specific type of induction metaphysics operating on extrapolations of scientific and theological knowledge. It would differ from classic metaphysics by its tentative conclusions and the need of their constant revision; it would be similar to classic ontology through generally seeking knowledge and having the objective to deliver a consistent, rational view of the world. Its theological character would be decided by the fact of using the Revelation (developed as a theological view of the world) as a source of data (Polak 2015, 51-54). Therefore, a theology of science, by working through the contact point of views of the world built around different notional constructs, could critically investigate the philosophical foundations of science and theology, pointing out essential differences in assumptions and notional constructs.

2. OBJECTIONS AND QUESTIONS TO BE ANSWERED

After providing a preliminary definition of the theology of science, its principal issues and some methodological caveats, some objections and questions emerge.

As seen in the case of an interactionist paradigm, the theology of science becomes an interdisciplinary/multidisciplinary branch, the status of which is not so clear. Polak suggests that considerations on theology of science within a separationistic model should begin with pointing out specific problems that it is supposed to consider. An essential problem would likely be a confrontation between the view of the world as presented by nature sciences with theology's view of the world. The idea of the world can be understood as a hermeneutical category, that is, a complete vision of general beliefs about man, the world and knowledge; a type of specific intellectual background, a specific knowledge of all types of cognitive behaviour of human beings (Liana 2010, 71). On the other hand, an important problem is the issue of view of the world itself, i.e. it is difficult today to show one coherent view of the world provided by the sciences. The specialization of the sciences and fragmentariness of proposed views of the world is problematic (Polak 2015, 47-51). What answer could the theology of science give to the problem of the fragmentariness of science and partial views of the world? Could different ontologies proposed within philosophical reflection upon particular sciences form the basis for both theology and science interpretation? As it was explained, one of the possible strategies of the development of the theology of sciences suggests that it should be a type of meta-scientific (and meta-theological) reflection. In this context, the theology of science would be understood as an activity on a meta-level, whose subject would be providing notional constructs of science and theology, and its essential target would be to individuate elements of the scientific view of the world that could be accepted as potentially serving towards uncontradiction of views of the world of theology and science (Polak 2015, 44-47; Strumiłowski 2019).

Furthermore, if we are considering that a program for the theology of science would lead to an attempt at evaluating contemporary scientific efforts from a theological point of view, questions arise such as whether theology is open to external content coming from current view of the world and if so, how such and opening is to be understood? Can one give a positive answer to postulate of assimilation of scientific data in theological analysis? (Mścisławski 2015).

In contemporary science, the question of the dependence of ontological conclusions upon physical theories, which are subject to relatively quick

changes, is widely discussed. Therefore, an analysis of the temporality of science and the dynamics of its development seems to be very important (anticumulativism, cumulativism). One can, however, ask if the variability of scientific theories and extremes of their philosophical interpretations would essentially make it impossible to work out coherent views, and moreover block building another layer of theology of science upon science and its philosophy? (Janusz 2015). Would it therefore make any sense to build theological conclusions upon such a volatile foundation of ontological analysis?

It seems that an intermediary layer of dialogue between sciences and theology should use the achievements of philosophy of science and philosophy of mathematics, considering the fact that mathematical tools are today often the only possible means of scientific exploration. In regard to completion of ontology of science, Dadaczyński suggests that the development of theology of science could be a completion of ontology of mathematics (Dadaczyński 2015). In this context, this would essentially mean discussing the relations between universe of mathematical objects and God. Mathematics itself does not take on the problem of existence and nature of mathematical objects (extreme realism, conservative realism, conceptualism) – they are the subject of philosophy of mathematics. Einstein wrote that "without belief in internal harmony of the world there could not be any science. Foundation of any scientific research is a conviction that the world is an orderly and understandable entity, which is a religious belief" (Einstein 2001). Therefore, the question arises if the belief about the uniformity of nature or its mathematicality, which is the basis for any research, is founded on theological ideas? It seems that only from a broader philosophical-theological perspective can we give full meaning to the whole immanent that is science.

IV. CONCLUSIONS

The situation in which theology and science do not have any points of contact and seem to ignore each other, is all the more dramatic because of the fact that "nothing is more dangerous of the ignorance of a problem, if not the ignorance of a solution" (Koyré 2018, 15). The main idea of the theology of science project is to avoid such a risk and offer a new opportunity for dialogue between theology and contemporary science.

From analysis of the basic ideas of the theology of science result four main proposals for the discipline.

The first one concerns the problem of the temporal dimension of scientific progress. There are many thinkers who propose a philosophical analysis of the nature of empirical theories, of the objects that they describe, but also on the nature of scientific evolution (Marcacci 2018b, 205-218). From the current philosophical reflection on science, contrary to the standard view of science dominating in the first half of the 20th century, it appears that scientific theories are never absolute and given once and for all. If scientific theories change, then the world they describe also changes. Unlike the metaphysical theories of the past, the ontologies proposed within the philosophical discourse on science rather have a local and non-comprehensive character, therefore the question remains about the use of different local (partial) ontologies within the theological reflection that should recognize the fact that scientific rationality is expressed contextually, historically.

Secondly, it seems that what remains fundamental for theological reflection is not so much the specific way in which an empirical data is described, but rather the fact that nature presents itself as understandable, intelligible. In fact, in Heller's thought one can note the importance of the *Logos* (sense), which consequently leads to the search for a coherent world view, which is called by Heller as rationality/mathematicality of the world. This unifying theological vision would involve different cognitive contributions and would remain open to constant changes, showing the dynamic character of our world view. In this context, theology must start from Revelation and speak about science with its language, indicating the areas that the scientific method does not recognize (e.g. the problem of creation). Therefore the second proposal concerns the in-depth study of the theological concepts of the world in their historical-conceptual development, in order to better distinguish in them the invariant elements (a revealed datum) from the variant ones (historically conditioned). This proposal assumes the hierarchization of theological statements. In other words, not all theological truths are as important and unchangeable as dogmas.

Thirdly, it should be noted that the discussion on the nature and purpose of the theology of science, provided by Bugajak and Szczurek, went in a very promising and profitable direction, in the sense that it reveals the attempt to provide some suggestions of an epistemological nature to establish the theology of science. Going in this direction, it seems that the main question to be answered is: "how to build the theology of science?". It would be too naive to find the answer by proposing only case studies, or by trying to provide the theological interpretation of some scientific data. In fact these are not lacking in the field of *Science and Religion*. But case studies are often limited to some kind of "fragmentary" work and could lead once again to problems related to the

"God of the gaps" argument. Therefore, the third proposal suggests a specification of how the methodology of the theology of science should work in order to be able to dialogue with the problems of today's science (e.g. the problem of intelligibility, causality and scientific explanation). One may intuit that in this context that the theology of science could be interpreted as the critical analysis of the conditions of possibility of philosophical and scientific thought. In other words, it seems that the theology of science could be interpreted first of all as the critical analysis of the foundational paradigm present in science and philosophy (Grenz and Franke 2001) and as the consequence can cause widening the perspective of human rationality (Giostra 2019). This critical approach would not necessarily mean philosophical/theological relativism or scepticism, but would bring the opportunity for a fruitful, dynamic dialogue based on the fact that for theologian the Universe is *vestigium*. The problem of the intelligibility (comprehensibility) of the world is certainly to be further investigated (de Regt 2017).

Fourthly, theology of science can bring about a return in philosophy to a sort of optimistic and realistic idea of human existence in the world (Woźniak 2007, 67-70). It is because theology of science offers the type of rationality that is the result of act of accepting in trust God's Revelation. On the contrary, modern philosophy was born as the consequence of systematic doubt. Therefore theology can help philosophy and science discover contemplating and receptive nature of human reason. Theology as the science of sense can save human reason from the slavery of its own categories, concepts, laws and teach us how ask new questions and patiently look for answers.

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MICHAŁ OLEKSOWICZ
Department of Philosophy
Faculty of Theology
Nicolas Copernicus University
ul. Gagarina 37
87-100 Torun (Poland)
https://orcid.org/0000-0001-5591-0579