



The influence of relativity on the philosophy of symbolic forms

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Accepted: 15 August 2024 / Published online: 8 October 2024
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Abstract

In this paper, I will deal with the analogy between Cassirer’s interpretation of relativity and his philosophy of culture. As to the structure of the paper, it will be divided into six parts. I will start with a brief introduction, after which I will succinctly outline Cassirer’s reading of Einstein’s theory, and in particular of general covariance. I will then focus on the presentation of his project for a “systematic philosophy” in the last chapter of *Einstein’s Theory of Relativity* and subsequently delve into the lexical references to relativity made in *Philosophy of Symbolic Forms*. After this, I will tackle Cassirer’s rectorship speech, where relativity and the philosophy of culture are explicitly interwoven, but with the important clarification (already provided in *Einstein’s Theory of Relativity* and *Philosophy of Symbolic Forms*) that not all kinds of knowledge align with de-anthropomorphized objectivity. The final section contains the concluding remarks.

Keywords Cassirer · Einstein · Neo-kantianism · Symbolic forms · Relativity

1 Introduction

This paper is inspired by Thomas Ryckman’s comment that relativity was both a “prototype for” and an “impetus to” the philosophy of symbolic forms.¹ Indeed, relativity theory does not only represent to Cassirer a scheme of what a physical theory should be, but also a “model” of how reason in general works.²

¹ Ryckman (1999, p. 614).

² The neo-Kantians maintained that “reason” is “scientific reason;” to wit, reason that unfolds within the history of science (Cohen 1885 and 1918, p. B6/C10). Therefore, on the one hand, this is simply “posi-

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To understand this point, I will proceed as follows. In the second section, I will outline Cassirer's interpretation of Einstein's theory. In the third section, I will survey specific quotations from the final chapter of Cassirer's book on Einstein to shed light on the parallelism between "systematic philosophy" and relativity. In the fourth—and longest—section, I will show, on the one hand, that the use of certain expressions and thoughts voices relativistic claims, while on the other hand, I will explain how the philosophy of culture extends beyond epistemology. I will further deal with this topic and Cassirer's rectorship speech in the fifth section. Hopefully, this will allow us to reflect on the categories of *objectivity* and *truth*.

2 Cassirer's interpretation of relativity theory

Among the neo-Kantian interpretations of relativity, Klaus Hentschel distinguished four revisionist trends from three immunising patterns.³ As to the latter, the general aim is to defend Kant's philosophy against the attacks of Einstein's enthusiasts and followers.⁴ In the case of revisionist approaches, one is instead available to revise Kant's philosophy and to even overcome it. So, one finds revisionists who try to update Kantianism in view of scientific progress; revisionists who work to replace Kant's a priori with more fluid claims that may be compatible with Einstein's theory; revisionists who invoke the historical relativisation of the a priori and replace synthetic a priori propositions with constitutive principles different from Kant's; and finally, revisionists who accept the substitution of a priori conditions with conventions.⁵

For Hentschel, Cassirer belongs to the second strand of revisionists. However, beyond inheriting some immunising arguments from Natorp, Cassirer admitted that we must rework Kant, so that we can expect to discover that some of his tenets are sympathetic with the third trend.⁶ My hypothesis is that the most revisionist aspects of Cassirer's interpretation have bearing on the passage from epistemology to the philosophy of culture. In effect, if one acknowledges that pluralism is characteristic of symbolic forms, it would be hard to justify it according to a reason whose architecture is depicted only in light of Newtonian physics and Euclidean geometry. In this respect, also the univocal understanding of space given in Kant's philosophy must be replaced by a more liberal view which will be then extended to culture in its entirety. To elucidate this argument, let us at first concentrate on the interpretation of general relativity (GR) and its focal concept, i.e., general covariance.

tivistic" historical sobriety. On the other hand, through and beyond history one may get a look at the very structure of reason, at reason as it is in its "unfolding." Cassirer solved the issue by assuming that the "unity of history"—which determines such an unfolding—is simply a "postulate" that helps the historian in her research (1906, p. 14).

³ Hentschel (1990, pp. 199–240).

⁴ For instance, Natorp (1910, pp. 392–404) advocated transcendental space and time against the changes occurring in their empirical counterparts due to relativity.

⁵ On the original meaning of "conventions," see Poincaré (1902, p. 50).

⁶ Laino (2023).

With special relativity (SR), Einstein was motivated mainly by a phenomenalist reform of space and time,⁷ and Minkowski, though rejecting the existence of these notions per se, still conceded that “projections” in space and time are relatively possible within an “absolute world” given by their conflation.⁸ But general covariance in GR implied more than this: it entailed the arbitrariness of coordinates and the discarding of any fixed background to which spatiotemporal phenomena can be referred. Einstein upheld this concept after troubled meditation in the crucial years from 1912 to 1915. In short, not only is each geometric transformation possible in passing from one reference frame to the other (passive general covariance), but transformations may also concern the same region of spacetime in such a way that they generate different metrics within the same coordinate chart (active general covariance). This is the consequence of “*Lochbetrachtung*,” in English, “hole argument.”⁹

It is perhaps at this point that Einstein estimated his idea that geometrical axioms are conventions to be proved, with the agreement between conventions and measurements to be handled empirically. Indeed, Einstein explained to Cassirer that we use “preliminary” concepts to approach the physical world; however, the choice of these concepts is never affected by the “nature of our intellect” but is simply arbitrary.¹⁰ Accordingly, physics is about the “coordination” [*Zuordnung*] of analytic and conceptual structures with synthetic a posteriori measurements.

For his part, not being aware of the hole argument,¹¹ Cassirer emphasised that every act of coordination is “unambiguous” and not arbitrary. In a letter sent to Schlick on October 23, 1920, Cassirer clarified that coordination is a priori and understood in terms of the “unambiguousness of coordination” [*Eindeutigkeit der Zuordnung*], which stands for the demand of the “unity of nature.”¹² In short, we can have as many arrangements of the manifold as those enabled by relativity; nevertheless, the fact that the manifold appears unified each time is indisputably established at the outset. This is the only possible and merely *formal* synthetic a priori, despite the apparent oddity of the expression. In Cassirer’s words: “The unambiguousness principle seems to me to be something more than a mere ‘convention’ or as an ‘inductive generalization:’ it seems to me an expression of ‘reason,’ of logos as such.”¹³

⁷ An interesting overview on the relationship between Einstein and phenomenologists (Mach, Petzoldt) is to be found in Russo Krauss (2023).

⁸ Minkowski (1909).

⁹ Since these topics are somewhat technical for this context, I have summed up here in a footnote a very rough explanation of both the arbitrariness of coordinates and the hole argument. Essentially, we can assign two different metrics to points belonging to the same “hollow” spacetime region, as the result of an “active” diffeomorphic transformation. Therefore, we will find that, by virtue of transformations, some points P' , within the same region of the correlated points P , may be endowed with two different values of the metric field ($g'_{\mu\nu}(x)$ which depends on the original field equation and $D^*g_{\mu\nu}(x)$ because of the diffeomorphism). The arbitrariness of coordinates thus follows naturally. Einstein was clear, for instance, in Einstein (1920, § 27, p. 64). Also, see: Ryckman (2005, pp. 19–22), Maudlin (2012, pp. 146–152), Norton (2019) and Giovanelli (2021). A deep mathematical explanation can be found in Rovelli (2021).

¹⁰ See Einstein to Cassirer, 5 June 1920 (Cassirer 2009, p. 46).

¹¹ On this, see: Ihmig (2001, p. 158).

¹² Cassirer to Schlick, October 23 1920 (Cassirer 2009, pp. 50–51). The reasons that pushed me to translate “*Eindeutigkeit der Zuordnung*” in that way are explained in Laino (2023).

¹³ Cassirer to Schlick, October 23 1920 (Cassirer 2009, p. 51).

In this context, I cannot deal with the analysis of this assumption.¹⁴ I would rather point out how Cassirer found a way to broaden the epistemological interpretation of general covariance. Let us read the following excerpt:

In the confusion and continuous flux of phenomena, the understanding seems at first *almost arbitrarily* to fix and separate out certain points in order to learn through them a definite law of change, but everything which it regards as determined and valid in this sense proves, in the course of further progress, to be a mere approximation. The first construction must be both limited and more exactly defined logically by the second, this again by the third, etc. Thus, ever anew does the temporarily chosen theoretical centre of thought shift; but in this process, the sphere of being, the sphere of objective knowledge, is more and more penetrated by thought. [...] The epistemological exposition and evaluation of each new physical theory must always seek to indicate the ideal center and turning point around which it causes the totality of phenomena, the real and possible observations, to revolve, whether this point is clearly marked or whether the theory only refers to it indirectly by the intellectual tendency of all its propositions and deductions.¹⁵

In brief, while Cassirer doubted conventionalism per se, historically speaking, it seems that our scientific constructions are almost arbitrary. This however ensures us that the history of physics marches towards the mutual determinations of standpoints whose truth can be reached comparatively. Therefore, on the one hand, we gain a plurality of forms, which represent the different manners in which we arrange and constitute the world; on the other hand, it seems that we should save these shapes singularly, that is, we should preserve their objective value along with the capacity they have to make things revolve around certain “turning points.” A comment from Ihmig may be useful to assess the analogy that will be possibly used in the philosophy of culture: “*Global* spatiotemporal structures must be deduced from *local* relationships. The process of objectification and generalisation is conveyed via a wider process of relativisation.”¹⁶ However, some modifications will be necessary to accomplish the goal of the philosophy of symbolic forms.

3 How to build upon “systematic philosophy”

In the last chapter of his book on Einstein, Cassirer draws the comparison between relativity and his own “systematic philosophy,” starting from a couple of apparently antithetical assumptions. Firstly, he maintains that every comprehension of nature

¹⁴ The most important criticism against this concept of coordination was raised by Schlick (1921, p. 131), who attacked Cassirer for having merely described the conditions according to which we believe that a theory is scientific. In this way, Kant’s philosophy can be squared with any scientific theory “*whatsoever*.” Therefore, we may suspect that Cassirer’s concept of synthetic is eventually analytic.

¹⁵ Cassirer (1921, pp. 18–19). English translation in Cassirer (1953, p. 366, my emphasis).

¹⁶ Ihmig (2001, p. 165).

is “anthropomorphic.” And surprisingly, he assumes that this also concerns science and relativity. Although Cassirer was conscious that in relativistic spacetime the differences between space and time are mostly obliterated, he in fact interpreted the above-mentioned “*Weltpostulat*”¹⁷ Minkowski in a methodological rather than in an ontological manner. Cassirer believed that the shrinkage of space and time as independent forms and their becoming “shadows” is the regulative idea of physics, which tries to reduce each objective determination to purely metrical relations. It follows that the absolute world is not taken as an objective hyper-thing called spacetime but stems from *our* way of determining the “meaning” of spatiotemporal phenomena in physics. Secondly, there are important consequences once we leave the field of epistemology and enter the wider reign of culture. Such effects are summarised in this excerpt:

It is the task of systematic philosophy, which extends far beyond the theory of knowledge, to free the idea of the world from this onesidedness. It has to grasp the *whole* system of symbolic forms, the application of which produces for us the concept of an ordered reality, and by virtue of which subject and object, ego and world are separated and opposed to each other in definite form, and it must refer each individual in this totality to its fixed place. If we assume this problem solved, then the rights would be assured, and the limits fixed, of each of the particular forms of the concept and of knowledge as well as of the general forms of the theoretical, ethical, aesthetic and religious understanding of the world. Each particular form would be *relativised* with regard to the others, but since this *relativisation* is throughout reciprocal and since no single form but only the systematic totality can serve as the expression of ‘truth’ and ‘reality,’ the limit that results appears as a thoroughly immanent limit, as one that is removed as soon as we again relate the individual to the system of the whole.¹⁸

It is clear that the language and ideas of relativity allow us to erect the scaffolding of “systematic philosophy.” Besides, the relativity of objectifications depending on the modes of objectification was already established in *Substance and Function* for different sciences,¹⁹ but we should now admit that it is binary: on the one hand, it refers to the single expression of reality—which is therefore *local*—; on the other hand, it more generally indicates how subjectivity and objectivity are arranged in a particular cultural form with respect to all the others. Consequently, we will henceforth distinguish the “truth” of the whole system, comparatively encompassing all forms, from the fact that we are “situated” each time in a single objectification. Moreover, the claim that the immanence of limitations is removable can also be explained through relativity. Just as metrics are taken away after an active diffeomorphism, in systematic philosophy “transformations” change the metrics. By way of example: the “metric” that allowed a medieval theologian to see in light a sign of God’s omnipo-

¹⁷ Minkowski (1909, p. 82).

¹⁸ Cassirer (1921, pp. 113–114). English translation in Cassirer (1953, p. 447, my emphasis).

¹⁹ Cassirer (1910, p. 253). English translation in Cassirer (1953, p. 232).

tence may be replaced by the “metric” that ensures to a physicist that light obeys mathematical equations.²⁰

However, if we find that “the moment [...] we transcend the field of physics and *change* not the means but the very goal of knowledge, all particular concepts assume a new aspect and formation;”²¹ and if we consider that “all the fundamental concepts undergo a characteristic intellectual *change* of meaning when we trace them through the different fields of intellectual consideration,” as well as that “where the copy theory of knowledge seeks a simple identity, the functional theory of knowledge *sees* complete *diversity* but, indeed, at the same time, *complete correlation* of the *individual forms*,”²² we should again conclude that metrics must be preserved, not only transformed. Indeed, in a previous passage extrapolated from the chapter on the concept of truth, Cassirer explained that the relativisation required by general covariance entails the loss of “subjective arbitrariness and contingency.”²³ What, then, will happen to those symbolic forms which encompass relevant subjective trends?

For instance, we observe that for mythical consciousness, places take a religious or magical meaning. As Cassirer says in *Mythischer, ästhetischer und theoretischer Raum*, “the sense of the mythical *fills* and determines space.”²⁴ This aspect does not clearly surface in the physicist’s mind since to her even the psychological and subjective understanding of space and time do not contribute to define them conceptually. Therefore, if we are seeking to establish a theory of culture that aspires to grasp truth as a “whole,” we should not pick physics as the general perspective of our inquiry.

We thus understand why building upon “systematic philosophy” based on relativity may conceal some ambiguity. Basic relational concepts—such as space and time, which would have been a priori in Kant’s system—depend on their manifestation within a symbolic form, just as the metrics change and endow spacetime with its different aspects. Nevertheless, we should restate that transformations in the philosophy of culture do not efface metrics with the transformation itself.²⁵

I will develop further considerations on this in the next two sections, starting from direct and indirect references to relativity in Cassirer’s philosophy of culture.

²⁰ In geometry, metrics concern information about lengths of lines or distances between points in space—see Maudlin (2012, p. 7). In the context of the philosophy of culture, “metrics” express meaning and describe the particular aspect of given cultural phenomena. To evaluate whether Cassirer’s claim is metaphysical depends on the interpretation of this “metaphor.”

²¹ Cassirer (1921, p. 116). English translation in Cassirer (1953, p. 450, transl. modified).

²² Cassirer (1921, p. 117). English translation in Cassirer (1953, p. 450, my emphasis).

²³ Cassirer (1921, p. 51). English translation in Cassirer (1953, p. 393).

²⁴ Cassirer (1931, p. 429, my emphasis).

²⁵ For the “effacement” of metrics in physics, see also Norton (1993, pp. 801–802).

4 Relativistic reverberations in Cassirer's *Philosophy of symbolic forms*

The distinction between direct and indirect references should not be taken too literally. Indeed, if our interpretation is correct, even indirect hints may point to an open strategy. It is nonetheless true that there are passages in which the comparison of the philosophy of culture with relativity is explicit, and it may be a good idea to abide by this strategy.

As regards indirect clues, a pivotal role is played by the three prefaces to *Philosophy of Symbolic Forms*. In the preface to his book on language, Cassirer writes:

Instead of investigating only the general premises of scientific *cognition* of the world, it would also have to differentiate the various fundamental forms of man's 'understanding' of the world and apprehend each one of them as sharply as possible in its specific direction and characteristic spiritual form. Only when such a 'morphology' [*Formenlehre*] of the human spirit was established, at least in general outline, could we hope to arrive at a clearer methodological approach and a more reliable principle of foundation for the individual cultural sciences.²⁶

The term "*Formenlehre*" is principally laden with its Kantian and Goethean legacy, but Cassirer's philosophy of relativity seems to lurk just around the corner. In effect, that single objectifications vary under a scheme prescribing individual character to each form reminds us of relativistic spacetime. However, Cassirer points out that:

The linguistic literature which it was necessary to consult became so vast that the goal I originally set myself receded further and further into the distance and I often doubted whether it lay within my reach. If I nevertheless continue, it is because, as the diversity of linguistic phenomena opened up before me, the particulars seemed more and more to cast light upon one another and to fit as though of their own accord into a general picture.²⁷

The endlessness of sources is a sign that the philosophy of culture must save, as it were, the meaning of each symbolic form and even of their sub-forms to allow their comparison. The philosophy of culture is thus allocentric since it represents the "whole" of all differentiated objectifications, also within a single form, whereas we have seen that relativity conversely gives up this very "whole" as a fixed spatio-temporal background. Again, different metrics can be produced, but not retained in Einstein's theory.

The combination of the relativity of forms with the comparative unity of all transformations is emphasised also in the second and the third volume of Cassirer's trilogy, but with significant developments. In particular, the third volume shows that we

²⁶ Cassirer (1923, p. VII). English translation in Cassirer (1955a, p. 69, transl. modified).

²⁷ Ibid., p. X. English translation in Cassirer (1955a, p. 71).

should handle transformations in the field of culture differently. Let us start from this excerpt:

Both in content and in method, the *Philosophy of Symbolic Forms* has gone beyond this initial formulation of the problem. It has broadened the concept of theory itself by striving to show that there are formative factors of a truly theoretical kind which govern the shaping not only of the scientific world view but also of the natural world view implicit in perception and intuition.²⁸

Cassirer had already provided his “formative factors” in the first volume. When addressing the genesis of language, he dealt with different modalities that describe the type of relation running between subject and object within that single form. He found that language evolves following a path that goes from the sensitive to the purely relational sphere, and more precisely from the expression of bodily movements or gestures to the pure forms of coordination individuated by “judgements.”²⁹ In short, a landscape that embraces what is immediately subjective up to what is theoretically objective is about to emerge.

Thus, the train of thought that goes from sensitivity to purely conceptual structures is uncovered by “trans-categorical operators,” to wit, expression, representation and symbolisation.³⁰ I argue that depending on which factor prevails in defining the meaning of an objectual content, there should be some change in the ‘cultural metrics.’ In this respect, it is worth giving another example. If we were living *among* and *as* Pirahãs, it would not make sense to state an actor plays a God or a deceased person during a magical ceremony; rather, she *is* that thing.³¹ To Cassirer scholars, this reminds us of the hyper-personification of the dancers celebrating rituals: also in this case we are speaking neither of dancers nor actors, but rather of gods.³² However, seen in a documentary from a Western sofa, the same events would turn into a *representation*, that is, something unusual which stands *in front* of us and not something *in* which we live. Something for which we accordingly have different semantic categories.

The analogy with relativity is impressive. In fact, depending on the *forces* of meaning inhabiting a given “region,” we are confronted with a different aspect of the very same *object*. Nevertheless, when dealing with systematic philosophy, I should restate that we need to put in the foreground the plurality of configurations, which is made clear in this excerpt:

²⁸ Cassirer (1929a, p. VII). English translation in Cassirer (1957, p. XIII).

²⁹ Cassirer (1923, pp. 122–300). English translation in Cassirer (1955a, pp. 177–319).

³⁰ Lassègue (2016). To put it roughly: expression is the inner motricity of the I outwards; representation entails the contraposition of subject and object which follows the establishment of language and its influence on perception; finally, symbolisation refers to the possibility of depicting the relations among phenomena through a logically stable and impersonal framework of theoretical relations.

³¹ Everett (2008, pp. 115–142).

³² Cassirer (1925, p. 48). English translation in Cassirer (1955b, p. 39).

For Hegel, phenomenology became the basis of all philosophical knowledge, since he insisted that philosophical knowledge must encompass the totality of cultural forms and since in his view this totality can be made visible only in the transitions from one form to another. The truth is the whole—yet this whole cannot be presented all at once but must be unfolded progressively by thought in its own autonomous movement and rhythm.³³

This is not the place to discuss Cassirer's interpretation of Hegel, but we see that our core motive is openly at play. Taking into consideration relativity and the philosophy of culture, the whole is for both the totality of all relative determinations, to wit, of all standpoints from which reality is observed, while objectivity depends on forces that convey a particular standpoint "locally." But in the case of symbolic forms, the emphasis on the results of comparisons is stronger. Hence, to switch from one symbolic form to another, we do not simply need a transformation, but a *μετάβασις εἰς ἄλλο γένος* that preserves the differences between every objectification. We can shed light on how science frees itself from mythical and linguistic representation, but we cannot fail to acknowledge that myth and language yet survive in a world where mathematics triumphs.³⁴

Bearing this in mind, we can say that it is no surprise that Cassirer addressed Eddington's interpretation of relativity in the final pages of *Philosophy of Symbolic Forms*. Through his seminal work *Space, Time and Gravitation*, initially published in 1920, Eddington upheld an "idealistic" interpretation of Einstein's theory, which however differed from Cassirer's.³⁵ Indeed, Eddington presented relativity as a theory describing physical reality from the standpoint of no one in particular,³⁶ a claim hardly reconcilable with Cassirer's theory of culture, for it disables the point of view of the subject.

Truth be told, Cassirer manipulates Eddington's attempt, which is also based on the necessity of slightly "subjectifying" general covariance, and thus the relations between points in the world-geometry.³⁷ Nevertheless, this reveals what impacted Cassirer's mind the most. In fact, Cassirer asks: "Is it possible to eradicate this last remnant of contingency, of subjectivity, from the description of the natural process? Is there not some world concept which is free from all particularities, which will describe the world as it is, not from the standpoint of this man or that man, but from the standpoint of no one?"³⁸ And his answer is emblematic: "Insofar as this question is admissible to begin with, it is in any case directed toward an infinitely distant point

³³ Cassirer (1929a, p. VIII). English translation in Cassirer (1957, p. XIV).

³⁴ Cassirer (1925, p. XIV). English translation in Cassirer (1955b, p. XVII).

³⁵ Eddington's idealism is *sui generis* if considered from a neo-Kantian standpoint. In fact, Eddington's most important reference was the physicist William K. Clifford, who defended a "pan-psychist metaphysics" in the second half of 19th century—see Ryckman (2005, pp. 216–217). That stand implied a monistic interpretation echoed in Eddington's elaboration of the concept of "mind-stuff," as in Eddington (1929, pp. 276–282).

³⁶ Eddington (1920, p. 30 *et passim*).

³⁷ For mathematical and epistemological details, see again Ryckman (2005, pp. 177–234).

³⁸ Cassirer (1929a, p. 555). English translation in Cassirer (1957, p. 478).

that is attainable at no given stage of science. Here we are dealing with a genuine transcendental idea in the Kantian sense, and no definite individual experience can accord with it.”³⁹ Therefore, if with relativity we put aside the last remnant of objectivity as to space and time representations,⁴⁰ we should not throw away subjectivity as well.

Even more explicit are the words with which Cassirer concludes the third volume:

Physics gains this unity and extension by advancing toward ever more universal symbols. *But in this process it cannot jump over its own shadow.* It can and must strive to replace particular concepts and signs with absolutely universal ones. But it can never dispense with the function of concepts and signs as such: *this would demand an intellectual representation of the world without the basic instruments of representation.* The physical concept of reality should ultimately be so formulated as to unite the totality of aspects resulting for different observers, so as to explain them and make them understandable; but in precisely this totality *the particularity of the viewpoint is not extinguished but preserved and transcended.* In this whole movement scientific knowledge confirms and fulfills, in its own sphere, a universal structural law of the human spirit. The more it concentrates in itself, the more clearly it grasps its own nature and strivings, the more evident becomes the factor in which it differs from all other forms of world understanding, and the meaning which links it with them all.⁴¹

We can thus conjecture that, while pushing forward with his “relativistic” analogy in *Philosophy of Symbolic Forms*, Cassirer subtly altered it to make it compatible with his systematic philosophy. This move is twofold to say the least. On the one hand, it subordinates science to the philosophy of culture.⁴² On the other hand, it investigates science through a cultural lens. In any case, the fact that science aims to describe physical reality as it is, to wit, in a totally impersonal way, must be framed broadly. Relativity remains an attempt at objectively picturing physical reality, freeing it from the human constraints of myth, perception and language. But as we have seen in the third section, this effort is equally anthropomorphic.⁴³ Science is the human subjective endeavour of comprehending the world objectively. It would be thus nonsensical to pretend that it is a-symbolic. Quite the opposite, the more we know how it uses its symbols, the deeper we understand it in comparison with other symbolic forms.

³⁹ Ibid.

⁴⁰ Einstein (1916, p. 776).

⁴¹ Cassirer (1929a, pp. 555–556). English translation in Cassirer (1957, pp. 478–79, my emphasis).

⁴² As acknowledged by Schlick (1921, pp. 140–41).

⁴³ See Skidelsky (2008, p. 121) and his comments on “the Marburg school’s humanist vision of science.”

5 The rectorship address

We have so far dealt with indirect references, but there is at least one important direct mention of relativity as an inspiring motive of the philosophy of culture. It comes from Cassirer's rectorship address, which was delivered on November 7, 1929 and entitled "Formen und Formwandlungen der philosophischen Wahrheitsbegriffs."⁴⁴ The speech contains this passage:

Riemann, in his habilitation lecture "On the Hypotheses which lie at the Bases of Geometry," was the first to express the bold thought that the inner reason of the dimensional relations in space is not to be sought in spatial matter as an inherently formless manifold, but in its binding forces—an idea that, as is well known, prepared that new design of physics that culminates in *Einstein's* theory of gravitation. One could in the same manner say that the dimensional relations within our conceptual space can always only be determined if one presupposes the 'binding forces' of the spirit. In the spiritual as well, we in a certain sense see ourselves driven towards a dynamic conception of metrics. For us, the measure of truth lies neither in a readily given, absolute object, a 'thing in itself,' nor in a ready subject, an intelligence that is predetermined in its form and essentially rigid, and which uniformly impresses its seal on everything that it grasps. What we call 'truth:' that does not establish itself and that does not consist in such a simple representation, in a mere mirroring, whether it be of the nature of the object or the subject. All truth must rather be developed in a free play of spiritual powers, in the exercise of the spirit's basic theoretical functions and its specifically distinct energies. The unity and the truth of knowledge does not emerge from a confluence of various images taken up from different locations, but from the activity, from the living synergy of intrinsically different spiritual powers.⁴⁵

This excerpt clearly shows that the question revolves around the similarity between physical and cultural space. Cassirer refers here to Riemann's *Habilitationsvortrag*, a seminal work influenced by Herbart, in which the German mathematician introduced the idea that space is a particular example of a more comprehensive logical structure called "the n -manifold" [*n-Mannigfaltigkeit*]. This idea bears on how we should understand the nature of space. In a nutshell, while we generally encounter purely structural claims defining the logical character of mathematical objects, when it comes to space we cannot retreat from hypotheses that mediate, as it were, the passage from mathematics to physics.⁴⁶ Space is not "devoid of form", a "formless

⁴⁴ The speech was disturbed by groups of nationalistic students, see Eilenberger (2020, pp. 363–65). Cassirer's admonishment on the relativity of forms thus acquires a historical flavour against the absolutist ideas that circulated in Europe during the 1920s.

⁴⁵ Cassirer (1929c, p. 356), cited according to the translation by Endres and Truwant included in this issue.

⁴⁶ See Torretti (1984, pp. 155–58).

manifold” [*formlose Mannigfaltigkeit*], since the “binding forces” of matter we can find in it mould its shape. Needless to say, this conviction is shared by Einstein.⁴⁷

At this point, Cassirer states that, *by analogy*, our “space of thoughts” [*Denkraum*] is permeated by the “binding forces” of spirit.⁴⁸ Therefore, just as we had to keep in mind that the content of space models its form, we should assume that in the reign of culture something comparable happens. For this reason, “truth” is the “play of forces of the spirit.” Indeed, we can neither grasp the nature of the subject nor the nature of the object, which therefore have no fixed boundaries. We may only hope to observe the interplay of motives that give rise to subjectivity and objectivity and forges each cultural form from within.

So far, so good: the parallelism is perfect. But it is not by chance that the main reference was Riemann in that passage: as soon as other interpretations of relativity come into play, Cassirer’s approach changes. Indeed, as in *Philosophy of Symbolic Forms*, he attacks Eddington. Also, he now focuses on the concept of history. In this field, the more universal knowledge is the result of the amplification of a subjective standpoint, namely that of the historian interpreting facts.⁴⁹ As a consequence, there will be as many worlds as the historians reconstructing them. In sum, we find out that “truth” does not stem from the “junction” of single and somewhat rhapsodic images; rather, it is the interplay between those different objectifications.

Considering that physics and history are related to different “conditions” which a priori shape the meaning of “their” facts, events and objects, there are only two ways for explaining why Cassirer still relied on that parallelism. On the one hand, it is possible that the analogy lost its foundational importance, and that Cassirer uses it as an explicative tool. On the other, a fragment from *Über Basisphänomene*, which dates to 1940, tells us that Cassirer was confident that his approach remained sound. While explaining that critical philosophy opposes any philosophy that counts on “absolutes,” not asking about the “‘truth’ of perception as *totality*” but about “the *position* of each particular “‘perception’ in the whole,”⁵⁰ he compares the quest for “invariants” in the philosophy of culture with that of relativity. This comparison shows us these two commonalities. In the first place, to think of the “truth” or the “falsehood” of given metrics we need to frame them within a generally covariant context. In the second place, if this be true, we may define “the sense of ‘subjectification’” in a relativistic manner: “subjectivity” is an “invariant” but “flexible structure” [*Gerüst*].⁵¹ But for this reason, we cannot assume that science is the only framework of reality, since it denies that subjectivity is “adjustable” and simply claims that it must not be incorporated in our understanding of the world.

Therefore, Cassirer seeks to vindicate an autonomous space for philosophy to study the different arrangements of self-articulating patterns of subjectivity and objectivity. We have seen that in this way science is subsumed under the more general concept

⁴⁷ Einstein (1920, § 28, pp. 65–7).

⁴⁸ Similar expressions can be found in the 1928 speech for the *Verfassungstag* (Cassirer 1929b, p. 291; p. 307).

⁴⁹ Cassirer (1929c, pp. 351–54).

⁵⁰ Cassirer (1940, p. 117). English translation in Cassirer (1996, p. 120).

⁵¹ Ibid., p. 118. English translation *ibid.*, p. 120.

of culture, but this does not entail that philosophy should be considered the idealistic master of scientific progress. It is rather a “combatant” [*Mitstreiterin*] among others in the “spiritual” world. Cassirer concludes his induction as follows: “*This dispute we cannot and should not avoid, nor should we prematurely break it off—we must sustain and carry it out following the thought that true harmony, according to the words of Heraclitus, is harmony in contradiction, like that of the bow or the lyre: παλίντροπος ἁρμονία ὥσπερ τόξου καὶ λύρης.*”⁵²

This proves that between 1927—the year in which *Phenomenology of Knowledge* was completed—and 1929, Cassirer had more than a reminiscence of the analogy that nurtured his philosophy of symbolic forms during 1920 and 1921,⁵³ but also clearly felt that the shift from epistemology to the philosophy of culture implied further clarification. Explanations that nonetheless resonate with a certain interpretation of relativity.⁵⁴ Accordingly, this shows why the analogy could not be overlooked and resurfaced in Cassirer’s *Nachlass* in 1940.

6 Concluding remarks: objectivity and truth in light of relativity

In this paper, I have tried to make clear that Cassirer’s reading of relativity may cast light on his systematic philosophy. I have thus outlined Cassirer’s interpretation of Einstein’s theory and illustrated that Cassirer focused on the concept of general covariance, which entailed the idea that the metrics of spacetime are local but undergo universal rules of transformation. Following this line, I have analysed the language and content of the philosophy of symbolic forms in search of analogies. I drew attention to the fact that Cassirer’s systematic philosophy is imbued with several terms, expressions and reasonings tied to relativity. Furthermore, I dealt with one excerpt in which Cassirer overtly likens the interplay of “forces” in Riemannian geometry to what happens within the world of “spirit.” Nevertheless, both the third volume of *Philosophy of Symbolic Forms* and the rectorship speech elucidate why we should be very careful when passing from physics to a more comprehensive theory of “truth.” If we understand with “truth” the “whole” characterising the relations that link human beings with the world, the ideal goal of physical knowledge cannot actualise this connection in full. Even worse, a “flat” extension of relativity will infringe the basic law of the symbolic forms, since there would exist an objective form independent from its semantic construction.

Accordingly, I concluded that for Cassirer truth is not simply the conventional freedom to assign metrics to a given “cultural region,” although metrics, to wit, “meaning” is per se arbitrary; rather, truth is the comparison of different shapes of “objectification” as the singularity of each of them must be saved. Thus, while a dif-

⁵² Cassirer (1929c, p. 359).

⁵³ Of course, I am aware that the project of the philosophy of symbolic forms “officially” traces back to the summer of 1917, see T. Cassirer (1981, p. 120). My claim is only that relativity was highly influential at the turn of the 1920s and even later.

⁵⁴ But significantly, from this does not follow that Cassirer’s reading can be coupled with Riemann’s philosophy of geometry. Indeed, Riemann was an empiricist. See Biagoli (2016, pp. 51–9).

feomorphism effaces the physical properties of a region once the transformation is done, this should never happen in the philosophy of symbolic forms. In this way, we will be able to assess the influence of objective and subjective trends in the determination of cultural productions so that none of them are simply left behind. It follows that we are before the pluralism of symbolic forms as it implies the principle of comparative objectivity and upholds the relativistic import of the concept of truth as a “whole.”

Funding Open access funding provided by Università degli Studi di Napoli Federico II within the CRUI-CARE Agreement.

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References

- Biagioli, Francesca. 2016. *Space, number, and geometry from Helmholtz to Cassirer*. Cham: Springer.
- Cassirer, Ernst. 1929. c/2024. Forms and transformations of the Philosophical Concept of Truth, transl. Tobias Endres and Simon Truwant. *Continental Philosophy Review* 57(3): 342–359.
- Cassirer, Ernst. 1953. *Substance and Function and Einstein's Theory of Relativity*, transl. William C. & Marie C. Swabey. Chicago: Open Court.
- Cassirer, Ernst. 1955a. *The philosophy of symbolic forms. Volume one: Language.*. Trans. Ralph Manheim. New Haven: Yale University Press.
- Cassirer, Ernst. 1955b. *The philosophy of symbolic form. Volume two: Mythical thought*, transl. Ralph Manheim. New Haven: Yale University Press.
- Cassirer, Ernst. 1957. *Philosophy of symbolic forms. Volume three: Phenomenology of knowledge*, transl. Ralph Manheim. New Haven: Yale University Press.
- Cassirer, Ernst. 1996. *The philosophy of symbolic forms: Volume 4: The Metaphysics of symbolic forms*. New Haven/London: Yale University Press.
- Cassirer, Ernst. 2009. Ausgewählter wissenschaftlicher Briefwechsel. In ECN 18.
- Cassirer, Ernst. 1906/1999. *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit. Band 1*. In ECW 2.
- Cassirer, Ernst. 1910/2000. *Substanzbegriff und Funktionsbegriff. Untersuchungen über die Grundfragen der Erkenntniskritik*. In ECW 6.
- Cassirer, Ernst. 1921/2001. *Zur Einsteinschen Relativitätstheorie. Erkenntnistheoretische Betrachtungen*. In ECW 10.
- Cassirer, Ernst. 1923/2001. *Philosophie der symbolischen Formen. Erster Teil: Die Sprache*. In ECW 11.
- Cassirer, Ernst. 1925/2002. *Philosophie der symbolischen Formen. Zweiter Teil: Das mythische Denken*. In ECW 12.
- Cassirer, Ernst. 1929a/2002. *Philosophie der symbolischen Formen. Dritter Teil: Phänomenologie der Erkenntnis*, in ECW 13.
- Cassirer, Ernst. 1929b/2004. Die Idee der republikanischen Verfassung. Rede zur Verfassungsfeier am 11. August 1928. In ECW 17, 291–307.
- Cassirer, Ernst. 1931/2004. Mythischer, ästhetischer und theoretischer Raum. In ECW 17, 411–432.
- Cassirer, Ernst. 1940/1995. Über Basisphänomene. In ECN 1, 111–195.

- Cassirer, Ernst. 1998/2009. *Gesammelte Werke. Hamburger Ausgabe (ECW I–26)*. Edited by Birgit Recki. Hamburg: Meiner.
- Cassirer, Ernst. 1995–2022. Nachgelassene Manuskripte und Texte (ECN 1–19), ed. John Michael Krois, Klaus Christian Köhnke, Oswald Schwemmer, and Christian Möckel. Hamburg: Meiner.
- Cassirer, Toni. 1981/2016. *Mein Leben Mit Ernst Cassirer*. Hamburg: Meiner.
- Cohen, Hermann. 1885 and 1918/1987. *Kants Theorie Der Erfahrung*. In *Werke, Bd. I.1*, ed. H. Holzhey. Hildesheim: Georg Olms.
- Eddington, Arthur S. 1920. *Space Time and Gravitation*. London: Cambridge University Press.
- Eddington, Arthur S. 1929. *The nature of the Physical World*. London: Cambridge University Press.
- Eilenberger, Wolfram. 2020. *Time of the magicians*. New York: Penguin.
- Einstein, Albert. 1916. Die Grundlage Der Allgemeinen Relativitätstheorie. *Annalen Der Physik* 4(49): 769–822.
- Einstein, Albert. 1920. *Über die spezielle und die allgemeine Relativitätstheorie (gemeinverständlich)*. 5th ed. Braunschweig: Vieweg.
- Everett, Daniel. 2008. *Don't Sleep, there are snakes. Life and Language in the amazonian jungle*. London: Profile Books.
- Giovannelli, Marco. 2021. Nothing but coincidences: The point-coincidence and Einstein's struggle with the meaning of coordinates in physics. *European Journal for Philosophy of Science* 11(45): 1–64. <https://doi.org/10.1007/s13194-020-00332-7>
- Hentschel, Klaus. 1990. *Interpretationen und Fehlinterpretationen Der Speziellen Und Der Allgemeinen Relativitätstheorie Durch Zeitgenossen Albert Einsteins*. Basel et al.: Birkhäuser.
- Ihmig, Karl-N. 2001. *Grundzüge Einer Philosophie Der Wissenschaften Bei Ernst Cassirer*. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Laino, Luigi. 2023. Natorp, Cassirer and the influence of Relativity Theory on Neo-kantian Philosophy. In *Philosophers and Einstein's relativity*, 107–138. Cham: Springer; ed. Chiara Russo Krauss, Luigi Laino.
- Lassègue, Jean. 2016. *Cassirer. Du Transcendental Au sémiotique*. Paris: Vrin.
- Maudlin, Tim. 2012. *Philosophy of physics. Space and time*. Princeton and Oxford: Princeton University Press.
- Minkowski, Hermann. 1909. Raum und Zeit. *Jahresbericht Der Deutschen Mathematiker-Vereinigung* 18: 75–88.
- Natorp, Paul. 1910. *Die logischen die logischen Grundlagen Der Exakten Wissenschaften*. Leipzig und Berlin: Teubner.
- Norton, John D. 1993. General Covariance and the foundations of General Relativity: Eight decades of dispute. *Reports on Progress in Physics* 56: 791–858.
- Norton, John D. 2019. The Hole Argument. The Stanford Encyclopedia of Philosophy. <https://plato.stanford.edu/archives/sum2019/entries/spacetime-holearg>. Accessed 19 July 2024.
- Poincaré, J.-Henri. 1902/1905. *Science and Hypothesis*. London: Walter Scott.
- Rovelli, Carlo. 2021. *General Relativity: The essentials*. Cambridge: Cambridge University Press.
- Russo Krauss, Chiara. 2023. A Machian Interpretation of the Theory of Relativity? Joseph Petzoldt's Reading of Einstein. In *Philosophers and Einstein's Relativity*, ed. Chiara Russo Krauss, Luigi Laino, 35–66. Cham: Springer.
- Ryckman, Thomas. A. 1999. Einstein, Cassirer, and General Covariance—Then and now. *Science in Context* 12(4): 585–619.
- Ryckman, Thomas. A. 2005. *The Reign of Relativity. Philosophy in Physics 1915–1925*. New York: Oxford University Press.
- Schlick, Moritz. 1921/2019. Kritizistische oder empiristische Deutung der neuen Physik? Bemerkungen zu Ernst Cassirers Buch „Zur Einstein'schen Relativitätstheorie.“ In *Texte zu Einsteins Relativitätstheorie*, ed. Fynn Ole Engler, 125–143. Hamburg: Meiner.
- Skidelsky, Edward. 2008. *Ernst Cassirer. The last philosopher of culture*. Princeton: Princeton University Press.
- Torretti, Roberto. 1984. *Philosophy of geometry from Riemann to Poincaré*. Boston: Reidel.