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ON THE REALITY AND VALUE OF TECHNOLOGY

SOBRE LA REALIDAD Y EL VALOR DE LA TECNOLOGÍA

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Abstract: In this paper I present an interpretation of Ernst Cassirer's diagnosis that modern culture is in need of an 'ethicization' (*Ethisierung*) of technology. The conclusion of the 1930 essay *Form and Technology* has not merely met with incomprehension among researchers. From the side of the Frankfurt School, Cassirer, presumably because of this choice of term, even earned ridicule. In its peculiarity, the concept of ethicization was not even attempted to be translated in the latest English translation (2013) of Cassirer's essay on technology, which is why it can be assumed that it is still not understood, even among experts. I thus present a close reading of *Form and Technology* that is in line with Cassirer's system of symbolic forms from his main work and also with relevant posthumous writings. Cassirer's position turns out as a defense of an autonomy principle that is at the base of any expression of the human mind, including technology. The downside of technology for modern culture lies in its entanglement with science and economy in the historical shape of capitalism. For none of those symbolic forms is essentially normative, philosophy's task is to reflect on and state those cultural resources that can help to break up this ligation.
Keywords: Continental Philosophy of Technology; Form and Technology; Ernst Cassirer; technology as symbolic form; Symbolic Forms; *Lebensphilosophie*; Transcendental Philosophy

Resumen: En este artículo presento una interpretación del diagnóstico de Ernst Cassirer según el cual la cultura moderna necesita una 'eticidad' (*Ethisierung*) de la tecnología. La conclusión del ensayo de 1930 *Forma y tecnología* no sólo ha suscitado incomprensión entre los investigadores. Por parte de la Escuela de Frankfurt, Cassirer, presumiblemente a causa de esta elección del término, se ganó

incluso el ridículo. En su peculiaridad, el concepto de eticidad ni siquiera se intentó traducir en la última traducción al inglés (2013) del ensayo de Cassirer sobre la tecnología, por lo que cabe suponer que sigue sin comprenderse, incluso entre los expertos. Así pues, presento una lectura atenta de *Forma y tecnología* que se ajusta al sistema de formas simbólicas de Cassirer de su obra principal y también a escritos póstumos relevantes. La postura de Cassirer resulta ser una defensa de un principio de autonomía que está en la base de cualquier expresión de la mente humana, incluida la tecnología. El inconveniente de la tecnología para la cultura moderna reside en su imbricación con la ciencia y la economía en la forma histórica del capitalismo. Puesto que ninguna de esas formas simbólicas es esencialmente normativa, la tarea de la filosofía consiste en reflexionar y enunciar los recursos culturales que pueden contribuir a romper esa ligadura.
Palabras clave: Filosofía Continental de la Tecnología; Forma y Tecnología; Ernst Cassirer; tecnología como forma simbólica; formas simbólicas; *Lebensphilosophie*; Filosofía trascendental

Introduction

This essay asks about the reality and actuality of technology. This does not formulate an essentialist question that asks about the substance of technology, but rather reflects on the function of technology in the construction of culture, that is, on the mental and material resources in discovering and inventing our world. Consequently, technology is not seen primarily as an instrument for the domination of nature, but above all as a meaning-generating phenomenon of human life. Such a perspective is to be gained following Ernst Cassirer, who understands technology as a symbolic form.[1] Starting from the three-volume *The Philosophy of Symbolic*

[1] The Hamburg edition of Cassirer's collected works is referred to below with the established abbreviation ECW and the posthumous writings (*Nachlass*) with the abbreviation ECN.

Forms (1923-1929)[2] and the article *Form and Technology* (1930)[3] the hypothesis shall be substantiated that the reality of technology can only be grasped if it is understood as a mental principle of form and not as a mere tool. Only from this point of view it is possible to decide about the value and unvalue of technology as well as the problem connection between freedom and alienation through technology.

Technology as a symbolic form

For Cassirer, the "primacy of technology" (Cassirer, FT, p. 272/ECW 17, p. 139) of his time is in a sense a fact, insofar as technology in a very real way extends its impact into almost all areas of culture. In 1930, inventions such as television are already on their way to becoming mass media and the first analog computers have been invented; newspapers are at their historical peak and report on current events in Berlin up to four times a day. The so-called Philosophy of Life (*Lebensphilosophie*), for example in the writings of Ludwig Klages (1929) or Georg Simmel (1911), had already expressed its unease about the pervasion of all areas of life by culture and technology at the time when Cassirer was trying to understand the problem of an antagonism of life and spirit (and thus technology) in a deeper way. For Cassirer, the problem is formed in such a way that the cultural "*counterforces* to technology" (Cassirer, FT, p. 272/ECW 17, p. 139), one would probably think - Cassirer does not specify it - of religion, myth, art and language, enter into an alliance with technology in order to be able to subsist, which ultimately leads

[2] The English translation of Cassirer's main work is additionally referred to by the abbreviation PSF.

[3] The English translation of this writing of Cassirer, which is central for the context of technology, is abbreviated FT.

to a subjugation of their own meaning under that of technology. At the same time, however, he also reminds us of the autonomy of any "energy of spirit" (Cassirer, 1923/ECW 16, p. 79 [76][4]), as which he understands symbolic forms such as myth, language, science, but also technology. Contrary to the Philosophy of Life, which sees the fate of the modern, technically saturated culture as a tragedy, Cassirer is concerned to create hope for freedom through the further development of the entire culture, because the "essence and basic determination of spirit does not tolerate any *external* determination" (Cassirer, FT, p. 273/ECW 17, p. 139). As a mental (*geistig*) principle, according to Cassirer's thesis, technology cannot in the long run suppress its own extra-technical formation conditions. Technology originates in the freedom of the spirit and will find its way back to it in an act of self-knowledge. This designates the task of a philosophy of technology, which is to perform this act of an "ideal demand" (Cassirer, FT, p. 273/ECW 17, p. 140).

In fact, this formulates a task rather than a solution to the problem of technology. Cassirer diagnoses that the development of modern technology has found an echo in philosophy since Fichte's *Wissenschaftslehre*, via the Value theory of the Baden School of Neo-Kantianism up to Pragmatism and, of course, to the Philosophy of Life, but technology and philosophy continue to stand in a "disparity" (Cassirer, FT, p. 275/ECW 17, p. 141) to each other. According to Cassirer, the philosophy of technology must step out of its niche position and shed its "peripheral character" (Cassirer, FT, p. 274/ECW 17, p. 141) by being incorporated into Kant's critical, transcendental program and "brought . . . before its forum" (Cassirer, FT, p. 274/ECW 17, p. 141) to ask about the validity, the quid juris, of its "meaning and right" (Cassirer, FT, p. 274/ECW 17, p. 141). But what does it mean that the unity of technology and philosophy can only be gained through their critique, only through

[4] The number in brackets here and in the following refers to the English translation.

"the insight and clear and frank acknowledgment that this particular case involves more than a mere difference" (Cassirer, FT, p. 275/ECW 17, p. 142)? In Cassirer's further development of Kant's transcendental philosophy, the critique of reason famously becomes the "critique of culture" (Cassirer, PSF 1, p. 9/ECW 11, p. 9). From this point of view, the critique of technology and the recognition of its independence and autonomy can only mean wanting to integrate it into the system of symbolic forms. And this is precisely what Cassirer wants to do with *Form and Technology*.[5] Such an undertaking has consequences for Cassirer's system, which hitherto has consisted of the symbolic forms of myth, custom, religion, art, language, and science,[6] because although Cassirer had conceived his system as open from the ground up (Kreis, 2010, pp. 388-401; Endres, 2020, pp. 124-129), the addition of new elements changes the configuration from which the philosopher's point of view first emerges. Cassirer writes:

> This fact determines the task that philosophy has to fulfill with respect to the current development of technology. This task cannot be limited to assigning technology a predetermined "place" in the whole of culture and, therefore, in the whole of a systematic philosophy that aims to be the

[5] It would have to be examined elsewhere whether this is an attempt to assimilate the discipline of philosophy of technology to transcendental philosophy or a proposal to conceive philosophy of technology as a special case of philosophy of culture (Favuzzi, 2017, p. 15). Against this would be the fact that Cassirer explicitly acknowledges the emergence of modern philosophy of technology with Ernst Kapp's main work of 1877 as well as many contemporary contributions originating from technicians in their independence. Undoubtedly, he calls for a "'critical' consideration and justification" (Cassirer, FT, p. 274/ECW 17, p. 141) of the philosophy of technology, but whether this must necessarily come from the side of the philosophy of culture seems doubtful to me in view of Cassirer's conciliatory philosophical attitude.

[6] In addition, for the first time in *Form and Technology*, as the quotation below shows, economy, state and law also appear as symbolic forms alongside technology.

> intellectual expression of culture. Technology cannot simply be placed next to other areas and formations [Gebilden], such as "economics" and "the state," "morality" and "law," "art" and "religion." For in the realm of spirit, separate domains never stand simply together or next to one another. Here, the community is never spatially static but possesses a dynamic character. One element is found "with" the other only to the extent that both assert themselves in opposition to each other, thereby mutually "setting each other into opposition" [auseinandersetzen]. Thus, every introduction of a new element [Element] not only widens the scope of the spiritual horizon in which this confrontation [Auseinandersetzung] takes place but also alters the very mode of seeing. This process of configuration not only expands outwardly; it also experiences in itself an intensification and heightening so that a simultaneous qualitative transformation, a specific metamorphosis, occurs (Cassirer, FT, p. 275/ECW 17, p. 142).

At no other place in his work Cassirer makes the consequences of the appearance and dominance of a new intellectual force like technology clearer to his reader: The critique of technology has as a consequence the critique of all symbolic forms, since critique is first of all an incomplete process (Cassirer, FT, p. 274/ECW 17, p. 141) and since secondly the meaning of all other symbolic forms is changed by the appearance of technology.[7] Only insofar as the question of meaning of all symbolic forms is continuously posed, the "questions of being and validity" (Cassirer, FT, p. 275/ECW 17, p. 142) of each can be decided and philosophy can fulfill its task as the "logical *conscience* of culture" (Cassirer, FT, p. 275/ECW 17, p. 142).

With the question of meaning, Cassirer's philosophical idealism now also enters the scene in the question of technology, an idealism, admittedly, that does not simply follow on from the traditional

[7] It would have to be examined to what extent this statement leads to problems for the horizontal (Moss, 2015, pp. 4, 11f.) and the complementary (Luft, 2015, pp. 14, 166-168, 178, 210) reading of the system of symbolic forms.

Platonism, but starts from a correlativity of ideality and materiality[8] - from a facticity-dependent Platonism (Hogrebe, 2006, p. 235), one could say. He justifies this by pointing out that the progress and formation of the philosophy of technology has already overcome the materialism of the 19th century. More recent authors such as Friedrich Dessauer, Eberhard Zschimmer, and Max Eyth, who are not primarily philosophically trained but are first and foremost natural scientists, engineers, and pioneers of technology, ask about the ideational content of technology, implicitly going back to Plato, for whom the relationship between idea and appearance grounds "not in the figures of nature but in the works and formations [Gebilde] of τέχνη [techne]" (Cassirer, FT, p. 277/ECW 17, p. 143). Technology, this is Cassirer's point, is not a skill for reproducing natural entities, but rather shaping the material world through a mental vision, which can operate in a nature-mimetic way, but at the same time also proceeds analogically, i.e. according to the model of already created mental entities, but is ultimately essentially symbolic in nature (Cassirer, PSF 1, pp. 133-146/ECW 11, pp. 133-146; Cassirer, FT, p. 303/ECW 17, p. 170). Through the fact that humans are symbolically active, they are essentially free in whether they form their environment in close reference to nature or close to the abstract. This freedom, considered as a whole, is the basis of Cassirer's idealism, according to which all symbolic forms, including technology, are free expressions of the human mind. Against this background, philosophical idealism means to take a step back from the final products of technology and to ask for the principles of form and construction of technology, i.e., to "focus on the *concept of form* rather than on the *concept of being* of natural

[8] This point seems to me to be lost in Rohbeck's (1997, p. 202) analysis, when he understands Cassirer's Platonism of Technique in such a way that one can also make the beginning with the general principle of form and does not have to start with an original correlation.

science" (Cassirer, FT, p. 278/ECW 17, p. 145). Asked about the conditions of possibility of, for example, the Eiffel Tower, one can consequently answer in a technical-scientific way and explain the chemical and physical nature of the iron used and the rivets, which were produced according to the puddling process, or the principle of a caisson for the construction of the foundations. Or one answers in view of, which mental (*geistig*) configuration must be given, in order to want to establish such a building. For this, however, the question of meaning must first be posed correctly, or spoken with Cassirer:

> If, instead of beginning from the existence of technological works, we were to begin from the form of the effective action of technology and shift our gaze from the mere product to the mode and type of production—and to the lawfulness revealed in it—then technology would lose the narrow, limited, and fragmentary character that otherwise seems to adhere to it. Technology adapts itself—not directly in its end result, but with a view to its task and problematic—into a comprehensive sphere of inquiry within which its specific meaning and original spiritual tendency can be determined (Cassirer, FT, p. 278/ECW 17, p. 145).

As already in the context of the structural analysis of language, myth and science, Cassirer wants to direct the view, as he says in connection with Wilhelm von Humboldt (Cassirer, 1930b/ECW 17, p. 205 [879]; Cassirer, FT, p. 281/ECW 17, p. 148), from the ergon to the energeia of technology. When Cassirer speaks of the lawfulness of the 'spiritual energy' technology, he is concerned with the autonomy of this form. However, this must first be uncovered, for it is an essential finding of Cassirer's that this question is obscured by the question of the value of technology. With regard to culture as a whole, according to Cassirer, German idealism, in distinction from Rousseau and the Age of Enlightenment, in which cultivation was tied to notions of happiness and moral perfection, brought about a turning point in time. It was not until Kant's *Critique of Judgment* (1790) that the independence and autonomy of the

beautiful, as distinct from the feelings of pleasure and displeasure and the demands of ethics, was discovered. And it is from here that Cassirer looks to technology when he states that contemporary philosophy ascribes to culture purposes "that are foreign to the pure creative will [*Gestaltungswillen*] and pure creative power [*Gestaltungskraft*] of technology" (Cassirer, FT, p. 280/ECW 17, p. 147). The hypothesis that Cassirer thus advocates is that the reality of technology is grasped only when we have grasped the laws of its mode of generation peculiar to it as compared to other forms of intellectual expression, when we understand the mode that is peculiar to it alone in the construction of culture. We therefore do not ask about the value, unvalue, benefit, disadvantage or tragedy of technology, but about its "authentically objective 'form'" (Cassirer, FT, p. 281/ECW 17, p. 148).

Language and technology

Cassirer begins the 'objective analysis' of technology with an analogy to language, in which he draws on two lectures by the "technician and . . . thinker of technology" (Cassirer, FT, p. 282/ECW 17, p. 149) May Eyth. Eyth argues that the cultural history of man is determined by an interrelation between (linguistically constituted) knowing-that and (action-oriented) knowing-how, and that the development of civilization is characterized by a dominance of knowing-that over skillful action from which knowledge derives. In this he sees the philosophical problem that man forgets about "the tool of the spirit . . . the spirit of the tool" (Cassirer, FT, p. 282/ECW 17, p. 149). It is not surprising that for Cassirer this is a "real *philosophical* problem" (Cassirer, FT, p. 282/ECW 17, p. 149), since *The Philosophy of Symbolic Forms* began in its first volume with an

analysis of language.[9] If technology can be understood as a symbolic form, then it is already clear at this point that the mental principle from which it grows must be the symbol and that technology, according to its function, must be classified in the spectrum of the known symbolic functions of expression, presentation and pure signification and that its real development follows the scheme of a mimetic, analogical and symbolic phase, which is also known from *The* P*hilosophy of Symbolic Forms* (Endres, 2020, pp. 103-133). Cassirer consequently objects to Eyth that knowing-that and knowing-how, i.e. language and action, do not form an antagonism so much as they are "originally united" (Cassirer, FT, p. 284/ECW 17, p. 150), since in both a principle of form becomes apparent and language *acts* exactly like technology. No linguistic act, according to Cassirer, who in this follows Humboldt, is a depiction of the world, but language, just like any practical skill, is an action in the world, a "real act of world-creation" (Cassirer, FT, p. 284/ECW 17, p. 150) by "raising up of the world to form" (Cassirer, FT, p. 284/ECW 17, p. 150). If this is so, if the analogy of language and technology thus bears, then by analyzing the form of technology it must also be possible to trace a change of form, an inner transformation of its meaning. The meaning of technology cannot lie in a linear development from the body as a kind of first technical means to an ever more far-reaching mastery of space and time, because in this one would remain in a purely instrumental view of technology and we had already shown at the beginning that value, means, purpose are subordinate categories to the question of meaning. The yield of the analysis of form is to show that in the

[9] In Cassirer research it is discussed whether this is not a tension to the central position of myth within the philosophy of symbols, which Cassirer refers to in various places as the "mother soil" (Cassirer, 1925/ECW 16, p. 266 [168]) or "mother earth" (PSF 2, p. 1/ECW 12, p. 1) of culture. Important contributions to the resolution of this tension can be found in Rudolph (1992, pp. 79 ff.; 2003, pp. 10, 78-80, 222-226).

extension of action through technology lies a qualitative change, whereby the creation of a "new world-*matter*" (Cassirer, FT, p. 284/ECW 17, p. 151) becomes possible.

Homo divinans and homo faber

For Cassirer, an analysis based on Kant's critical method always means 'reconstructive analysis,' a method that comes from Kant's *Prolegomena* (1783)[10] and that Cassirer adapted and further developed from his neo-Kantian teachers Hermann Cohen and Paul Natorp (Endres, 2020, pp. 47-52). It is reconstructive on the one hand because in it one goes back from the *forma formata* to the *forma formans*, i.e., to the functioning and making; and it is reconstructive on the other hand because one goes back to the mimetic, i.e., ultimately mythic, phase of the corresponding symbolic form in order to understand its inherent lawfulness and the principles at work in it. In Cassirer's work, myth in comparison to more developed symbolic forms often serves as a contrasting foil to make such principles and peculiarities visible. Now in the will to master nature Cassirer sees a crossroads that separates humans in early history from humans in later epochs of cultural development. Ethnology as well as comparative linguistics and religious studies at the time provide Cassirer with the material to establish such a crossroads in the light of a comparison between "cold cultures" (Lévi-Strauss) and the industrialized contemporary culture. Against this background, Cassirer distinguishes between *homo divinans*, the human being who wants to be effective magically, and *homo faber*, who knows how to be effective through technology. In his own words:

[10] Its definition reads: "[A]nalytic method…signifies…that one proceeds from that which is sought as if it were given, and ascends to the conditions under which alone it is possible" (Kant, 2004, p. 4:277, § 5 note *).

> Humans from an earlier stage are distinguished from those of a later stage, just as magic is distinguished from technology. The former may be designated as *homo divinans* and the latter as *homo faber*. The whole development of humanity presents itself, then, as a completed process, containing innumerable intermediary forms through which the human being moves from the initial stage of *homo divinans* to the stage of *homo faber* (Cassirer, FT, p. 285/ECW 17, p. 151).

The technical human is in this optics therefore not a late product of the modern civilization[11], but a human ideal type, which becomes already in the transition from the prehistory to the early history style and form defining for mankind. Cassirer now reproaches contemporary ethnology for not describing the relationship of *homo divinans* to *homo faber* without prejudice, if the latter is characterized by the fact that he projects his subjective drives and volitions into the outside world, and the latter by the fact that he knows the objective causal connections and limits of his volitional influence. This explanation of the specific difference of both types is namely circular, insofar as it is presupposed that subject and object are already always fixed categories through which humans experience themselves and their world. But this is not so. According to Cassirer's idealism

> these borders are not 'in themselves' objectively before us; rather, they must first be set down and secured, they must first be erected by the labor of spirit. The manner of setting these borders takes place differently according to the overall attitude in which spirit exists and according to the direction in which it moves. Each transition from one comportment and direction into another always ends in a new 'orientation,' a new relationship between the 'I' and 'reality.' (Cassirer, FT, p. 286/ECW 17, p. 153).

[11] This could be thought, because the basic idea of *homo faber* goes back to Anaxagoras, but in the modern age it is only through Henri Bergson and Max Scheler that it becomes widespread in philosophy.

One could say with Cassirer that reality is formed by a specific understanding of reality and that the degree of reality of a certain world view cannot be judged externally, e.g., from the scientific point of view. Rather, what is considered real to a person is what follows the internal standards and criteria of the dominant intellectual orientation. Thus, one misunderstands the magical human if one applies the category of causality, which presupposes an already established separation of subject and object, to his actions. Herein lies, as it were, a fallacy and a loss of object, for the specific difference between magical and technical action stands and falls with the recognition of the peculiar form of magical thought. Cassirer literally: "If we assume that the principle of 'causality' [Kausalität] and the question concerning the 'reasons' of being and the 'causes' [Ursachen] of events already prevail in the magical apprehension of nature, then the barrier between magic and science falls away" (Cassirer, FT, p. 287/ECW 17, p. 153). Magical action, then, is not a kind of imperfect experimental physics, as James George Frazer influentially postulated, but the real consciousness of the omnipotence of the I: cause and effect demand a form of congruence that is incomprehensible to causal thinking, for an action has taken place in real terms not only when the result has turned out as desired, but also when this has been anticipated 'correctly,' that is, according to magical ideas. Cassirer:

> All "real" actions, if they are to be successful, need such magical preparation and anticipation. Warring or raiding, fishing or hunting can succeed only if every individual phase is magically anticipated and at the same time "rehearsed" in the right way. Already in the magical view of the world, the human being tears himself away from the immediate presence of things and builds his own empire, with which he reaches out into the future. However, if, in a certain sense, he is freed from the power of immediate sensation, he has only exchanged it for the immediacy of desire. In this immediacy, he believes he is able to seize reality directly

> and to conquer it (Cassirer, FT, pp. 288 f./ECW 17, p. 155).

Thus already the magical human is no longer a plaything between the forces of nature and his own drives and sensations, but already exists temporally and in certain respects freely. But still the desire and the will to be effective is an immediacy, is not yet postponed and seized planning after causal understanding. In the two "originary-forms of magic" (Cassirer, FT, p. 289/ECW 17, p. 156), the word-magic and the image-magic, in which temporal and spatial ideas are generated by repetition, lies accordingly an "accomplishment of 'subjectivity'" (Cassirer, FT, p. 289/ECW 17, p. 156), which first lead to the separation of I and world, of being and deed. Man has no longer succumbed to his impressions, but has taken the path of the "first active direction" (Cassirer, FT, p. 289/ECW 17, p. 156), which leads to technical behavior. This in turn is characterized by a double process in which the will can experience itself as directly acting, but must also be capable of postponement and renunciation. Only in this way can the technical object come into being by relegating its manipulation as a goal to the distance and by recognizing its dependence on the being of nature, not on that of desire. This process precedes the planning grasp and makes it possible only through the growing recognition of an independent being of things and of the laws that are operative in them.

The thesis of the mediateness of the tool and the mind

The central theses of Cassirer's philosophy of technology have been substantiated up to this point to the extent that it has been possible to prove (1) that technology can be understood as a symbolic form, as an autonomous power of the mind, and (2) that in the mythical worldview an anthropological turning point from *homo divinans* to *homo faber* is taking place, which in a sense allows subject, object

and mediality to come into being in the first place. Perhaps the most central thesis in *Form and Technology,* however, Cassirer advances when he asserts that from a philosophical point of view there is no difference between high technology and primitive tools. The guiding idea here is that it is through *homo faber* that mediality in the true sense is first gained. While *homo divinans* remained trapped in the immediacy of desire, the insight that a mediation between the realm of needs and that of nature is required was revealed to the technically competent human being. The tool is thus mediating medium between these two spheres and thus essentially mediateness. Every simple tool and every marvel of technology have as their principle that they are constructed as media mediating desire and reality. This hypothesis, in turn, supports the thesis of technology as a symbolic form, for mediateness and mediality are specific to all symbols. And this observation, in turn, supports the thesis that technology is a 'spiritual energy' and that there is a 'spirit' of technology, which Max Eyth already wanted to place alongside the techniques of the mind. In Cassirer's words:

> It would not be an exaggeration to say that the transition to the first tool not only contains the seeds of a new *mastery of the world* but also marks a turning point in *knowledge*. The mode of action established here grounds and steadies, for the first time, a type of mediacy that belongs to the essence of thought. All thought in its pure logical form is mediated. It is directed to the discovery and extraction of a mediating structure that joins the opening sentence and the ending sentence of a communicative chain. The tool fulfills the same function, presented here in the logical sphere, in the *objective* sphere. It is grasped, as it were, in objective intuition; it is not merely the *terminus medius* of thinking. It sets itself between the first position taken by the will and its goal. Only in this in-between position is it permitted to separate them and set them at a proper distance. So long as the human being makes use only of his limbs, his bodily 'organs,' in order to achieve his goals, such distancing is not yet reached. Admittedly, he *effectively acts* on his environment—however, there is a great distance between this effective activity and the *knowledge*

> [Wissen] *of this effective activity*. Whereas all human doing is absorbed in apprehending the world, human beings cannot yet *comprehend* [*ergreifen*] it, because they do not yet conceive [*begreifen*] of it as an objective figure, as a world of objects. The elementary taking-possession-of, immediate physical grasping [*Fassen*], is not a constructive 'comprehending' [*Erfassen*]. It does not lead to a construction in the region of pure looking or in the region of thinking. In the tool and its use, however, the goal sought after is, for the first time, moved off into the distance (Cassirer, FT, pp. 291 f./ECW 17, p. 158f.).

Thinking and acting thus become two sides of the same coin, which also confirms the simultaneous originality of technology and language claimed at the beginning: both participate in the construction of an object world opposed to us, which we humans strive to control mentally and technically. This gain, however, is at the same time a loss, because the fact that the immediacy of desire and its magical fulfillment are successively pushed back by a new understanding of reality opens up the path of quasi-unlimited possibilities, which is not hedged in by modern technology, but consistently pursued and expanded. The construction of the Eiffel Tower does not simply fulfill a predetermined goal, for example, to be the entrance portal and observation tower of the 1889 World's Fair, but generates meaning and significance for countless other possibilities of thought and action. Not only was it for a time the tallest building in the world and thus simply a demonstration of what is technically possible, it was also used for military communications and is still used today for radio and television reception, and at the same time it is the national symbol of France and an icon of modernity. The meaning of technical doing, Cassirer concludes, is consequently transformed in modernity into the pure form of action. According to this thought, the meaning of technology does not lie in the achievement of predictable ends, rather "it is the pure form of doing, the type and direction of the constitutive force as such, that determines this meaning" (Cassirer, FT, p. 297/ECW 17, p. 164).

Thus, the meaning of technology is essentially determined in terms of freedom: Modern technology allows human beings almost unlimited dominion over nature, but without being able to provide an answer to the goal of this dominion. Technology becomes autonomous, and through it human beings come to the self-knowledge that the meaning potentials of technology are in their own hands, which in the end simply goes hand in hand with responsibility for technology and the reality it creates for us.

Does technology alienate?

Technology as symbolic form, as we have seen, participates in the demarcation between I-consciousness and the external world and thus in the construction of objective reality. In this it stands in analogy to language, which in its development also marks out the boundaries of subject and object more and more clearly. Therein lies the function of technology (and language). The meaning of technology thus lies on the one hand in the construction of a counter-world, which for one thing follows its own laws, but is also increasingly mastered by technology itself, and on the other hand in the absence of an absolute purpose. In its very nature, technology is objectifying and autonomous. Against the background of this (preliminary) result, Cassirer now dares to include the question of value in the reflection and to express the suspicion, familiar from Value theory and the Philosophy of Life, that technology in its execution essentially alienates human beings from themselves, from their subjectivity. In any case, the idea that the cultural world, especially in technology, has the potential to crush rather than liberate the individual cannot be dismissed out of hand. Cassirer puts it this way:

> Is not what was regarded here as the authentic achievement of technology

> nothing other than the basic evil from which it suffers? Does not this exploitation of the world of objects [Objekte] at the same time necessarily result in the estrangement of human beings from their own essence, from what they originally are and feel? With the first step into the world of facts that technological labor secures and constructs for him, the human being also appears to be subjected to the law, to the brute force of factual matters. And is this brutality not the strongest enemy of the inner life enclosed in his I, in the being of his soul? All technology is a creation of spirit; spirit can only ground its own mastery in this way because it conquers all the forces that find themselves enclosed within it, despotically holding them down. To become master, it must not only restrict the free realm of the soul but also deny and destroy it. No compromise is possible in this conflict. Spirit, whose goal and power emerge in technology, is the irreconcilable opponent of the soul. And as it progressively estranges the human being from his own center of life, the same thing occurs concerning the human relationship to the whole of nature, insofar as this is not taken in one of the senses already distorted by technology, insofar as it is not thought of as a mere mechanism obeying general laws, but is felt in its organic peculiarity and fullness of life. The more the power of technology grew within the spheres of modern culture, the more passionately and inexorably did philosophy levy this complaint and accusation against it (Cassirer, FT, pp. 279 f./ECW 17, p. 164).

Cassirer identifies Klages as the most exposed representative of the idea that the spirit and thus the entire culture, above all technology, is in fundamental conflict with the soul of the human being. In this view, the human becomes a deficient being, not in morphological terms, but in psychological terms: the animal has ahead of him the ability to live in harmony with the cosmos. Cassirer takes this idea seriously and points out that such an anthropological view does not simply refer to the problematic instrumental rationality, which is especially expressed in technology, so that its excesses can, as it were, be outweighed by more 'reasonable' products of culture in the emphatic sense. Because the raised question "is directed not to the consequences but to the ground" (Cassirer, FT, p. 298/ECW 17, p.

165), the attempt to resolve it cannot consist in "to compare the pernicious effects of the rational-technical spirit . . . with other pleasant and beneficial consequences, drawing an acceptable or favorable balance out of this comparison by a 'hedonistic calculus'" (Cassirer, FT, p. 298/ECW 17, p. 165).

The question of the 'ground' for technology is now an anthropological one: technology as a symbolic form, as an inherent factor in the construction of culture, must be understood as a "necessary path toward becoming human and as a particular phase along this path" (Cassirer, FT, pp. 298 f./ECW 17, p. 165). In this perspective, not only is culture the medium of expression of the human being, but the human being itself becomes the medium of culture. Every symbolic form enables and constitutes a certain mode of being of the human. Thus, according to the "*functional* considerations and analysis" (Cassirer, FT, p. 298/ECW 17, p. 165), in a certain sense technology is what makes human beings human. Through humans, one could say, technology realizes their freedom by snatching them from the passivity of impressions and opening up a mode of freely shaping the world. Cassirer illustrates this connection with the philosophies of Friedrich Schiller, Johann Gottfried Herder and Wilhelm von Humboldt: While in Schiller's perspective the 'centrifugal drive' leads to the thesis that the human being is only human where it plays, that is, where it develops freely and creatively, Herder and Humboldt emphasize the kinship of language and art, which also leads to an accentuation of the creative and the free in the context of the question of the value of culture. Cassirer wants to give technology precisely this status in the questions about the human being and culture and states again that philosophy has to make up for an omission here. "The domain of effective activity of technology seems, however, to be denied any such acknowledgment" (Cassirer, FT, p. 299/ECW 17, p. 166). In the recognition of this creative side of technology, it is now revealed

that the free shaping of the world never refers only to an outside, but also has a feedback effect, which we have already explained in the context of the demarcation between subject and object. The conquest of the world is a "double movement" (Cassirer, FT, p. 300/ECW 17, p. 167) and from this insight the Klages's thesis of the oppression of the subject by culture can be transformed into a counterthesis, according to which self-knowledge presupposes precisely this conquest of the outside. Cassirer writes about the symbolic forms:

> Each new figure of the world opened up by these energies is likewise always a new opening out of inner being; it does not obscure this being but makes it visible from a new perspective. We always have before us a manifestation from the inner to the outer and from the outer to the inner—and in this double movement, in this particular oscillation, the contours of the inner and the outer world and their two-sided borders are determined. This is also true for the effective activity of technology, because it is in no way directed toward the seizing of a mere 'outside'; rather, it encloses in itself a particular turn inward and backward. Here, too, it is not about *breaking free* of one pole from another but about both being *determined* through each other in a new sense (Cassirer, FT, p. 300/ECW 17, p. 167).

At this point, Cassirer indirectly confronts Klages with an epistemological argument: the determination of what is unleashed technology, what is exuberant and oppressive cultivation, and what is living subjectivity presupposes that the poles ego and world, ego and culture have already mutually determined themselves to such an extent that they can understand themselves *as* antagonistic in the sense of 'cultivated' and 'living'. Thus, the *original* antagonism becomes a correlation constitutive of world and self-knowledge – a revelation.

Mimetic, analogical and purely symbolic phase of technology

Cassirer's philosophy of technology relies on revelation instead of tragedy of culture. The self-revelation of the mind follows in Cassirer's system, as we said before, a three-stage ideal-typical scheme. Cassirer calls the principles of symbolic development mimetic, analogical, and purely symbolic, and this scheme is familiar to Cassirer's readers from the first volume of *The Philosophy of Symbolic Forms* on language. Mimetic means that the formation of a linguistic, mythical, or artistic object is modeled on nature. In the context of language analysis, the onomatopoetic sounds took this place. The rain magic, in which produced smoke clouds resemble the longed-for rain clouds, would be an example from myth, in which altogether the mimetic principle prevails most strongly. It could also be summarized by saying that in the mimetic phase of a symbolic form, the mental sense of expression (its meaning) resembles the sensual means of expression. The analogical phase sets itself apart from this and it is language that helps the analogical principle to break through. Here the guiding principle is (re-)presentation: one mental content can stand for another without resembling it sensually. In the development of natural languages, different sounds are increasingly freely linked and their meaning increasingly determined by convention rather than by similarity. The purely symbolic phase, in turn, is characterized by the fact that in it the original symbolism of all modes of expression and understanding becomes the guiding principle. This reveals the relational character of every symbol: Its meaning then no longer results from a reference to something that can be sensually grasped, but exclusively in the context of reference to other symbols. Exemplary for this is modern mathematics and natural science. The reality character of the quark symbol q, for example, neither lies in a sensual-material substance nor in analogy to such a substance, but is given by natural law

reference connections within a physical system.

If a similar sequence of stages in the historical course of technology could be proven – speaking in ideal-typical terms, of course – then Cassirer would already have come a good deal closer to the attempt to classify technology in the system of symbolic forms. And indeed, just the history of the philosophy of technology provides indications of such a development. In his *Grundlinien einer Philosophie der Technik* (1877), the founder of modern philosophy of technology, Ernst Kapp, endeavored to prove that technology is essentially organ projection. "By organ-projection, he understands the fact that an individual limb of the human body does not simply work outward but creates in the external existence, so to speak, an image of itself" (Cassirer, FT, p. 300/ECW 17, p. 167). With this kind of self-image production is meant a self-enlightenment about the preconditions of this ability. For example, according to Kapp, man creates technical devices such as the microscope modeled on the eye. Ultimately, however, the physiological theories that emerge with the development of such devices again become the prerequisite for recognizing the functional mechanisms of the eye scientifically. In this way it can be understood that devices such as the hammer, the shovel, or the knife are projections of the hand, indeed that all basal tools are images of the body. "[E]very hand tool appears in this sense as a further positing and re-formation, as an exteriorization, of the hand itself" (Cassirer, FT, p. 300/ECW 17, p. 167). According to Cassirer, and we concur here, the thesis of organ projection admittedly has its limitations. It already seems less plausible when we ask ourselves to which part of our organism we wanted to attribute a highly technical device like the smartphone. The pointing gesture as a natural counterpart to the functioning of the smartphone would be obvious at first glance, but a second thought quickly shows that this intuition does not hold, because a smartphone can realize infinitely more functions than would be described by the pointing

gesture and the wanting to grasp. However, Kapp's thesis for the mimetic phase of technology is valid. Whether it extends as far as Kapp thought it did when he described the cables of the telegraph network as a projection of the human nervous system[12] , remains to be seen. How far Kapp's theory carries is unimportant for the present context, because at least it marks the beginning of a development which we want to understand as a symbolic one. Cassirer also immediately succeeds in designating the end point of the development when he refers to Karl Marx's "law of the 'emancipation of the organic barrier'" (Cassirer, FT, p. 302/ECW 17, p. 169). We recall that the symbolic phase of any symbolic form is characterized by relationality and regularity: meaning is derived from pure lawfulness. In Marx's theory, then, we already find the anticipation[13] of what the production of modern machines amounts to: the detachment from everything organic to the overcoming of everything organic. Only a few years lie between these theorizations of Kapp and Marx. The temporal proximity between the beginning and the end of the self-knowledge of technology cannot hide the fact that the real-historical development of technology is decisive for its ideal development. Cassirer refers here to the philosophy of Franz Reuleaux and again to that of Dessauer and Zschimmer in order to emphasize the central position of the development of modern mechanical engineering and to locate the analogical phase of technology exactly here:

> As to the basic principle that rules over the entire development of modern mechanical engineering, it has been pointed out that the general situation of machines is such that they no longer seek to imitate the work of the

[12] "The nerves *are* cable devices of the animal body, the telegraph cables *are* nerves of mankind" (Kapp, 2015, p. 133, my translation).

[13] Rohbeck (1997, p. 206) seems to overlook this point when he writes that Cassirer's reference to Marx is not without some irony against the background of the alienation thesis.

> hand or nature but instead seek to carry out tasks with their own authentic means, which are often completely different from natural means (Cassirer, FT, p. 302/ECW 17, P. 169).

The machines created in this way – think, for example, of the printing press or the sewing machine – change the mode of working itself and thus the mode of action of technology, whereby the latter undergoes an inner transformation of its meaning. The further technology moves away from its original, mimetic mode of design, the better it fulfills its actual function. This becomes particularly clear with the 'flight problem', a long cherished and late realized wish of humans. It could be solved only "once technological thought freed itself from the model of bird flight and abandoned the principle of the moving wing" (Cassirer, FT, p. 302/ECW 17, p. 169). The theory of technology and its actual development thus give good reason to believe that Cassirer's three-phase model bears and that technology can be integrated into the system of symbolic forms, namely, insofar as "the march of technology is mastered by a universal norm that rules the whole of cultural development" (Cassirer, FT, p. 303/ECW 17, p. 170). Cassirer has thus demonstrated what he wished to show at the outset, namely, that every appearance of a new symbolic form is subject to a logic that begins with the sensuous and successively frees itself from it. Therein lies its contribution to culture, in whose ideal progress Cassirer sees the self-liberation of the human being, which lies in the fact that it recognizes the autonomy in its ways of shaping the world and thus ultimately its own freedom. However, due to the fact that the addition of technology to the other symbolic forms as well as the entry into its analogical phase occur relatively late, the related effects are sometimes perceived drastically. No new symbolic form can be integrated into the structure of human culture "without struggle and the sharpest opposition" (Cassirer, FT, p. 303/ECW 17, p. 170). Cassirer's philosophy of technology thus ultimately also provided a

systematic and not only a psychological reason explaining why the complaint of the so-called Philosophy of Life was so *en vogue* in his time. Its representatives are admittedly right in their diagnosis that technology appears with a sudden dominance never known in comparison to the other symbolic forms and thus frightens the individual. Cassirer merely cautions us to consider that technology draws on the same basic intellectual presuppositions as all other forms of culture, and that a one-sided condemnation of technology would create a performative self-contradiction. He therefore concludes:

> The movement of the I breaks upon its own creations; the greater the scope and stronger the power of this creation become, the more its original tide of life subsides. This tragic impact of all cultural development is, perhaps, no more evident than in the development of modern technology. Those who turn away from it on the basis of this state of affairs forget, however, that, in their damning judgment of technology, they must logically include the whole of spiritual culture. Technology has not created this consistent existence; rather, it merely places an especially remarkable example urgently before us. It is, if one speaks here of suffering and sickness, not the ground of suffering but merely a manifestation, a symptom of it. What is crucial here is not an individual domain of culture but its function, not a particular way that it follows but the general direction it takes (Cassirer, FT, p. 305/ECW 17, p. 172).

Cassirer thus rejects the charge of the Philosophy of Life to the effect that it is not life but the spirit that is the judge of the value and unvalue of technology. Consequently, it cannot be a question of the unpleasantness of a life crushed by culture, for the value of technology can only be judged according to whether, following the principle of mental autonomy, it leads to freedom or not much more to unfreedom. Cassirer thus does not simply represent an apology of technology in demarcation from the Philosophy of Life, but reserves a critique of technology. Only the standard, which the critique is to follow, became a different one by the way of looking at technology as a symbolic form.

The need for an 'ethicization' of technology

The problem of technology, and herewith Cassirer prepares its critique, stems from (1) a fundamental tendency of all symbolic forms. Every new form appears with a claim to absoluteness. The autonomy of a symbolic form has a bearing on the freedom of other forms. For: "It not only insists on its own norm, but threatens to posit this norm as an absolute and to force it upon the other domains" (Cassirer, FT, p. 306/ECW 17, p. 173). In constructing its own norm, then, technology enters into conflict with other symbolic forms. This conflict can be sharper or less problematic. For example, technology also combines well with symbolic forms such as art and science, as can be seen impressively in the already mentioned Eiffel Tower. Other masterpieces of architecture, such as the Guggenheim Museum Bilbao or the ancient pyramids of Giza, in which technology, religion and myth are harmoniously combined, also demonstrate impressive syntheses. With (2) a view to the symbolic function of pure meaning[14] guiding technology, further potential for

[14] As already mentioned above in section two on technology as a symbolic form, Cassirer determines the symbolic forms not only by three phases, according to which each one develops, but also by a tripartism of the symbolic function itself (expression, presentation, pure signification). The philosophy of symbolic forms treats the three forms language, myth, science because in them exactly one of the mentioned three symbolic functions functionally clearly predominates (in myth the expressive function, in language the presentational function and in science the function of pure meaning). Other symbolic forms are characterized among other things by the fact that several symbolic functions are equally effective in them. This does not mean, however, that e.g., in language the expressive and the pure signification function are not also effective. In contrast to art, however, the presentational function *dominates in* language, while in art such dominance manifests itself in the oscillation between expression and meaning: "In an absolutely unique way that is reserved for it alone, the work of art permits 'figure' and 'expression' to merge into one another" (Cassirer, FT, p. 311/ECW 17, p. 178). Cf. Endres (2021) for further details.

conflict is revealed in the fact that the strong tendency towards objectification is at the expense of the expressive function. The objection raised by Simmel or Klages against the oppression of the subject by the objective figures of the mind cannot be completely dismissed in the case of technology, for it is deeply inherent in technology and also in science to erase the ego pole carried by the experience of expression. It is true that neither technology nor science succeeds in this in an absolute sense[15] , but a tendency and a will to erase the subject is manifest in them. Technology and science[16] therefore sacrifice in their own realization a part of culture, which Cassirer, however, tries to turn positively by pointing out that it is the human – and not, for instance, the superiority of technology itself – who makes this sacrifice and thus proves his freedom and 'humanity'. Cassirer literally:

> Technology combined with theoretical knowledge, to which it is closely related, increasingly renounces all that is measured by expression in order to lift itself up into the strictly 'objective' sphere of pure signification. At the same time, it is indisputable that the gain achieved here contains a sacrifice. However, even this sacrifice and renunciation, this possibility to cross over and rise up into a pure world of things, shows itself to be a specific human power, an independent and indispensable descriptor of 'humanity' (Cassirer, FT, p. 313/ECW 17, p. 180).

[15] One can show this transcendentally in two ways, once by pointing to the constitutivity, objectivity, and skepticism-resistance of the expressive function in the structural construction of cognition (Cassirer, PSF 3/ECW 13, pp. 68 f., 74, 69, 89; Cassirer, ECN 4, p. 189; Cassirer, ECN 5, pp. 107 ff.) and once by pointing to the failure of the naturalization attempts of the mind and the untransferability of the first-person perspective into a third-person perspective (Kreis, 2010, pp. 11-21).

[16] About their kinship, however, the specific difference between science and technology must not be forgotten: "Technology does not initially ask what *is* but what *can* be" (Cassirer, FT, p. 309/ECW 17, p. 176).

The word 'humanity' is not in quotation marks at the end of this paragraph for nothing. Otherwise, Cassirer would have to be accused of naivety with regard to the destructive consequences of technology.[17] With regard to ethics, however, Cassirer comes to the clear conclusion that "modern technology . . . and the economy it has created and maintains with its own means" (Cassirer, FT, p. 314/ECW 17, p. 181) causes problems such as the mechanization of labor, the exploitation of those who produce, overproduction, mass consumption, waste of resources, and a creation of new needs that increases into infinity. In the face of this statement, Cassirer again tries to take a step back, to turn his eyes away from the *consequences of* technology and to ask whether "these effects can necessarily be attributed to its essence, that is, whether they are implicit in the configuring principle of technology, and whether they are demanded by it" (Cassirer, FT, p. 314/ECW 17, p. 182). Cassirer answers this question in the negative and, following Karl Marx and especially Walther Rathenau, argues that these consequences of technology "are to be understood not so much in themselves as in terms of their connection with a certain form and order of an economic system and

[17] Regardless of the quotation marks, one could speculate that Theodor W. Adorno had just read *Form and Technology* when he wrote to Max Horkheimer: "Here, too, there was full agreement between Pollock and me, and likewise with regard to Mr. Cassirer, whom I consider to be completely idiotic" (Adorno, letter to Horkheimer from Oxford, May 13, 1935, my translation). Admittedly, in 1935 Adorno could not refer to Cassirer's posthumous late work *The Myth of the State (*1946), in which the latter examines the technical fabrication of political myths that led to the industrial extermination of the European Jews (Cassirer, ECW 25, pp. 273-291), nor to the 1944 *Dialectic of Enlightenment* written jointly with Horkheimer. It is striking, however, that the *Dialectic* of *Enlightenment's* guiding thesis of the unity of instrumental and practical reason stands in blatant contradiction to Cassirer's 'humanity thesis' on instrumental rationality, technology, and science. (see also Bevc, 2005). On the question of whether and how Cassirer's view of technology changes in *The Myth of* the *State* cf. Krois (1982, pp. 210, 215-220).

that every attempt at improvement must begin here" (Cassirer, FT, p. 315/ECW 17, p. 182). But now Cassirer had shortly before asserted that capitalism emerges from technology, that there is by all means an intimate relationship between technical progress and the generation and financing of its own resources. He wants the connection between technology and economy to be understood as "made necessary and thrust upon one by a particular situation, by concrete historical circumstances" (Cassirer, FT, p. 315/ECW 17, p. 182), but not as the 'birth of capitalism from the spirit of technology'. The 'spirit' or meaning of technology, we recall, consists, like that of any other symbolic form, in its autonomy and freedom. In a sense, it is not 'in the nature' of a symbolic form to subordinate itself to another, in this case: the economy, or to enter into an unholy alliance. It must be remembered at this point that Cassirer does not advocate a teleology of freedom, although he does argue that the meaning of culture consists in the liberation of human beings from the sensual barriers of their nature, that is, in a kind of self-liberation (Freudenthal, 2004, p. 206f.). "Human culture taken as a whole may be described as the process of man's progressive self-liberation" (Cassirer, ECW 23, p. 244). Thus, the human being is not immune to civilizational setbacks precisely in the formation of new symbolic forms; they provide no guarantee of said self-liberation. Against this background, it is coherent that Cassirer locates the reasons for the fatal conflation of technology and (capitalist) economy in the arbitrariness of history, but not in the 'spirit' of technology. But what should be done now that the real danger emanating from this constellation has been recognized? What would a 'humane' action look like in the face of the reality of technology. Cassirer is clear that the answer to this cannot be found simply in technology or only in a further scientification and objectification of the life-world:

> It is not enough to appeal to the forces of nature or to the forces of mere

> understanding by technological and scientific intellects; rather, here it suffices to indicate the point at which only the deployment of a new willpower can create change. In this construction of the realms of will and the basic convictions upon which all moral community rests, technology can only ever be a servant, never a leader. It cannot by itself determine the goal, although it can and should collaborate in carrying it out. It best understands its own meaning and its own telos when it is content with the fact that it can never be an end in itself. Rather, it has to fit itself into another 'realm of purpose,' into a genuine and final teleology that Kant described as ethico-teleological. In this sense, the 'dematerialization' of technology, rendering it ethical (*Ethisierung*, my addition), forms one of the central problems of contemporary culture (Cassirer, FT, p. 315/ECW 17, p. 182).

It is true that technology and science themselves appear with a certain normative force of the factual (Jellinek, 1921, p. 339) and transfer their own standards with the 'factual world' formed by them to all other areas of culture. In view of the whole of culture and especially against the background of the ethical question raised, however, it finally crystallizes that technology and science are normatively inexpedient.[18] As the 'logical conscience of culture' it therefore remains the task of philosophy to argue for the 'dematerialization' and 'ethicization' of technology. The practical implementation of such an epochal challenge as the 'liberation of technology from the economy and of the economy from technology' cannot, however, be carried out exclusively on the part of philosophy, but requires the pooling of all normative resources of culture – first and foremost of law.

[18] Of course, this is not yet a proposal for a solution, but first of all a self-knowledge of the human with regard to its position to technology. It is therefore surprising when Rohbeck (1997, p. 197) speaks of a peculiarly pale and unoriginal solution that is hardly convincing.

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