UNITY IN ANCIENT AND MODERN PHILOSOPHY AND THE HYPOTHESIS OF UNIVERSAL HISTORY

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The paper argues for three things. First, that the abstract concepts of ancient Greek and modern mathematics are fundamentally different. The general treatment of mathematical things in ancient Greek mathematics manifestly does not presuppose a general mathematical object, while in modern mathematics the generality of the method presupposes precisely such a general mathematical object. Two, that this difference in abstract concepts of mathematics makes a difference in our understanding of a discipline other than mathematics, specifically, in the discipline of history. And, three, that what is at issue in this difference is whether it is necessary for human beings to understand themselves from the perspective of history in order to understand themselves properly as human.

Keywords: *mathematical objects, concept of number, history, self-consciousness.*

Introduction

In what follows I argue for three things. One, that the abstract concepts of ancient Greek and modern mathematics are fundamentally different. Two, that this difference makes a difference in our understanding of a discipline other than mathematics, specifically, in the discipline of history. And, three, that what is at issue in this difference is whether it is *necessary* for human beings to understand themselves from the perspective of history in order to understand themselves properly as human.

In order to argue that the concepts of ancient Greek and modern mathematics are fundamentally different, I first analyze Aristotle's account of the method of abstraction (ἀφαιρεσις) within the context of his critique of the Platonic "separation" (χωρισμός) thesis. I then contrast Aristotle's method with Descartes' account of the abstraction that brings about the symbolic objects of analytic geometry and therewith the concepts that, to this day, characterize the concepts of mathematics. I will follow the path-breaking research of the philosopher and historian of mathematics Jacob Klein by characterizing the Cartesian method of abstraction as "symbolic abstraction" and show that, in radical contrast with the Aristotelian abstraction, its function is not to "lift off" sensible qualities from natural beings in order to arrive at the "pure" beings investigated by mathematicians. Rather, I will show that abstraction for Descartes functions to provide the pure intellect with visible representations of the "pure" mathematical concepts that it (the

intellect) has generated with its own power. Moreover, I will show that a decisive mark of the purity of the latter is the impossibility of their determinate representation in terms of the concepts that render intelligible the natural beings that are the concern of Aristotle and pre-modern mathematics and philosophically generally.

On the basis of establishing the difference between abstraction in ancient and modern mathematics, I will argue that there is a radical difference between the general concepts that were employed by ancient mathematicians and the ones now employed by modern mathematicians. The general treatment of mathematical things in ancient Greek mathematics manifestly does not presuppose a general (indeterminate) mathematical object, while in modern mathematics the generality of the method presupposes precisely such a general mathematical object. Rather than explore any further the philosophical significance of the incommensurability of ancient Greek and modern mathematical concepts, however, I will instead turn to my second argument. There I argue that the idea of "universal history" supposed by modern historiography and believed in by many contemporary humans owes its origin to something that is paradoxical. I will identify this paradox with the attempt at the beginning of the seventeenth century to establish a "new science" that, in direct opposition to Descartes' idea of "universal mathematics", investigates and arrives at the "true certainty" of non-abstract, which is to say with its originator, particular and therefore "concrete" facts. My third argument will conclude by raising – but not answering – the question of whether a proper self-understanding of what it means to be human *must* employ the perspective of universal history introduced by this new science.

I. The First Argument

Aristotle's account of the origin of mathematical numbers (ἀριθμοί μαθηματικοί) represents a fundamental critique of the Platonic account and is therefore only comprehensible within its context. This can be seen from the fact that Aristotle's account explicitly takes issue with the Platonic separation thesis, its attribution of a *generic* unity to numbers (ἀριθμοί), and its supposition of a non-mathematical one (ἕν) in order to ground arithmetically mathematical unity. What is in dispute between Plato and Aristotle, however, is *not* the being of numbers, characterized as the discrete delimitations of the field of noetic units into definite amounts, the first principle (ἀρχή) of which is one, but, rather, the mode of being proper to numbers when defined in this manner. The Platonic determination of the mode of being of "pure" numbers in order to account for the possibility of counting sensible beings misses, according to Aristotle, precisely the ontological dependence that is characteristic of each number. From the fact that it is possible to articulate the parts of something in declarative speech (τῷ λόγῳ) before denominating the whole, it does not follow that the "being" (τῇ ουσίᾳ) of these parts has priority over the being of the whole. Likewise, it does not follow from the assertion that there is any number of something that this number exists outside of that which it delimits with respect to its definite amount. For example, in calling a human being "white", no other being is meant than precisely this white human being. Likewise, in the asser-

tion "three trees", "three" has the same status as the "white"; the definite amount of trees, namely, "three",", therefore has no proper nature (φύσις). The being so many of trees, like their being green, is dependent on there being *trees*.

For Aristotle, then, the ontological status of number is determined by their natural meaning: the assertion that certain things are present in a specific number means only that *such a thing* is present in just this definite multitude. This characterization of the mode of being number, however, presents the problem of how to account for the purely noetical quality of mathematical numbers. This is a problem for Aristotle because, unlike Plato, who posits an ontological independence of the intelligible being (νοητόν) from sensible beings, Aristotle's reliance on the natural meaning (revealed in the analysis of ordinary speech) of numbers precludes making the supposition behind the Platonic position. It precludes the hypothesis (ὑπόθεσις) that the homogeneous, indivisible (and therefore unchanging) characteristics proper to the first principle of numbers in mathematical knowledge (ἐπιστήμη) have their basis in a mode of being separate from sensible beings (αἰσθητά). Aristotle, instead, articulates the being belonging to these characteristics as one originating "by abstraction" (ἐξ ἀφαιρέσεως), of being "lifted off",", "drawn off",", or, in other words, being "abstracted" from sensible beings. The mathematical objects (τὰ μαθηματικὰ) studied by mathematical knowledge, which in their being are not detached from sensible beings, are therefore nevertheless studied *as if* they were detached or separated.

How is it that someone who thinks mathematical objects is able to do so as separate from sensible beings, even though they are not separate? The answer to this question arises by considering how the "single parts" (μέρη) of sensible beings are gotten hold of in the talk about them (λόγος). When the aspects of a sensible thing are distinguished in speech one after the other from the concrete context of their being, a context without which they would not exist, for example, "this" "round" "white" "column",", it is apparent that the nexus of being that links all the parts together is disregarded in a manner that allows each part to be singled out and apprehended separately. This "disregarding of" establishes a new mode of seeing that allows something *in* sensible beings to come before its regard in a manner that, for all their variety and transitoriness, is unchanging. As such, it remains always in the same condition and therefore satisfies the demand that for Aristotle as for Plato must be satisfied for a being to be an object of knowledge. Thus Aristotle writes: "Each thing may be viewed best in this way – if one posits that which is *not* separate *as separate*, just as the arithmetician and the geometer do" (*Metaphysics* M, 1078 a 21 ff.).

The lifting off characteristic of abstraction expresses nothing other than the "disregarding of" that makes possible the articulation in the talk (λόγος) of the single parts of a sensible thing, a disregarding in which sensible beings are deprived of their sensible qualities and individual differences. In a manner of speaking they whither away, becoming mere pieces of bodies or mere bodies themselves, such that a demonstrative discipline becomes possible, one that, as it were, "reads off" such pieces

or bodies their arithmetical and geometrical aspects, namely, how many or how extensive they are. The theoretical mathematician, moreover, in making that which comes into view in abstraction as the subject matter of study, no longer views what has been abstractedly lifted off as having its basis in mere bodies. Rather, disregarding all that is sensible, the mathematician regards what has been abstracted in this manner merely as "pieces" (*Stücke*), pieces whose content, being indifferent to all that is sensible, leaves only that which is asked about in the question "how many" together with continuous magnitude. In the case of what is investigated with respect to its number, these abstract pieces are transformed into neutral monads, into merely countable pieces of things whose sensible qualities have withered away. Thus it is not an *original* separation but a *subsequent* indifference that characterizes the mode of being of pure numbers. The task of determining how this mode of being itself is to be understood, however, belongs not to mathematics but to first philosophy (πρώτη φιλοσοφία) alone. This is the case, because mathematics simply has to accept the mode of being of the various *original* abstract beings that comprise the *pregiven* (vorgegeben) contents of arithmetic and geometry, for example, the "one", the "line", the "plane", and so on, and deal with them only insofar their noncontradictory connections are demonstrable.

It follows for Aristotle from the abstract mode of being of the monad that the Platonic solution to the problem of the unity of the items in a number-assemblage, that is, to the question how the "many" can be understood as "one" at all, is untenable. In the first place, it is untenable because the positing of a "common thing" (κοινόν) *above* and *alongside* the multitude of units supposedly unified by the integrity of its genus (γένος) attributes unity to something that, properly speaking, cannot be one at all. It cannot be one, because what is meant in speaking of a number is precisely something that is *more* than one thing. Things are one by immediate contact, mingling, or the disposition of their parts, none of which are possible when it comes to the monads in the dyad, triad, and so on. Rather, just as two men are *not* one thing over and above *both* of them, so, too, in the case of two pure monads. In the second place, on account of *what* numbers are one, "no one says anything" (*Metaphysics* L, 1075 b 34).

The Platonic view of the generic unity of numbers is the consequence of the supposition of the detachment and therefore independence of noetic monads from sensible beings. This supposition removes the basis for appealing to the natural articulation of ever different and divisible sensible beings to account for the *origin* of the delimitation and unification of single numbers. Having eliminated this ultimate foundation of all possible unity, the separation thesis seduces the one who posits it into embracing the view that the possibility of collecting together *two* monads in *one* number has to be the effect of an original and therefore independent genus (γένος) or eidos (εἶδος). Monads, however, being in truth nothing other than sensible beings that have been do"). reduced by abstraction to mere countable pieces of such beings, are, like sensible beings (ἀισθητά), *divisible*. This means that when "one" monad is divided into "two" there is nothing but their *being two* that may be termed their "twoness". That is, there is no "one thing" – the whole

of which is beyond or beside the monads in question – that provides the integrity of their delimitation *as two*. Thus, for Aristotle, a number is precisely not *one* thing but a "heap" (σωρός) of sensible beings or abstract monads. A number, therefore, is precisely *nothing more* than these parts, for it is only what has been or can be counted.

This last point is crucial to Aristotle for understanding properly the soul's preknowledge of all possible numbers, which he, following Plato, calls a "stored possession" (κτῆσις) – in contrast to a "possession in use" (ἕξις). Because a number is something that coincides with what is counted, the "pure" (that is, "indifferent" to the determinate qualities of sensible beings) noetic structures available to the soul prior to counting must not be spoken of as *one thing* that, in turn, points to a common thing (κοινόν) that should be understood as a whole above and outside of the multitude of counted objects. To the contrary, because the availability of such structures originally becomes known *in* counting, it is likewise rooted in the exercise of counting sensible multitudes and extracting from them, by abstraction (ἐξ ἀφαιρέσεως), "pure" monads. As a consequence, numbers of "pure" monads involve, no less than numbers of sensible beings, "heaps" – in this case, "heaps" of "pure" monads. They are therefore "one" only in the sense that something can be said to extend "over the whole" (καθόλου), which rules out their being "one thing" any more than numbers of sensible beings.

Aristotle's answer to the question that he maintains is unanswered in the generic Platonic account of number namely, *what* it is that is responsible for its proper unity, begins by posing it only for *actually* counted multitudes. Such multitudes, as multitudes of homogeneous ones, comprise a unity insofar as each multitude is measured by its own one. Counting presupposes the homogeneity of that which is counted, which means that in counting one and the same thing is fixed upon, such that its definite amount is arrived at only after *one and the same thing* has been counted over. The "one", then, does *not* have priority in counting as the superiority of a genus over a species, but rather in its character as the "measure" (μέτρον) by which the definite amount of a multitude is determined. The "being one" of sensible beings marks both the possibility of their being counted and the *indivisibility* of the "one" that, insofar as it functions to supply the measure of what is counted, is "one sensible thing" and therefore undivided. For example, the "being *one*" of each apple in a number of apples is not divided and therefore does not have a division, even though each apple as a sensible being can be divided, as can any other sensible being. Indivisibility therefore belongs to what is counted only insofar as it is the origin of the measure of the count, because "whatever does not have a division, insofar as it does not have it, is in that respect called one" (*Metaphysics* D 6, 1016 b 4-6). Any specific number is therefore "a multitude measured by the one" (*Metaphysics* I 6, 1057 a 3 f.). As such, its "being" (οὐσία) is the multitude of units as such, in the precise sense of the "how many" it indicates. Thus being (οὐσία) is understood here to be derived, insofar as that *what* each number is, is not something that is separate or detached from the definite amount of homogeneous units it delimits. Thus, for example, "six" units are not "two times three" or "three

time two" units, but rather precisely "once six". For Aristotle, then, there is no such thing as *the six*, with a noetic being that would be distinct from the many hexads that delimit this or that multitude of "once six" units.

The "totally indivisible" (παντη ἀδιαίρετον) and "completely exact" (ἀκριβέστατον) status that the arithmetician understands the unit (μονάς) to possess arises for Aristotle on the basis of the elevation of a habitual procedure to the rank of knowledge. The habitual expression of the sensible beings in every count in terms of their "being one" – for example, instead saying "one apple, two apples, three apples", what is said is rather "one, two, three" – points already to the purely arithmetical status of sensible beings as countable material. When this status is abstractedly "lifted off" sensible beings, the mathematical μονάς originates. And it originates as nothing more than the character of being a measure as such, a character expressed through its indivisibility and exactness. The character of the one as measure is what is responsible for the universal applicability of "pure" numbers, namely, of the applicability of the unit (μονάς) to any arbitrarily countable being whatsoever. The unit (μονάς) is so applicable because its mode of being is *not* one of *being* separate from the sensible beings that are the source of its abstracted *origin*. Hence, it is only because sensible beings, *as* the *kind* of beings that they are, are one and indivisible, that the arithmetician – having already abstractedly posited the unit (μονάς) as totally indivisible – is able to then see what always follows from any given sensible being insofar as it is subject to being counted or calculated with as a "unit". Thus, for example, a human being as the kind of being it is, namely *as human being*, is one and indivisible and, as such, the *abstract* unity (μονάς) is applicable to it.

In Descartes' philosophy, however, the unit has a different status, that of a "simple thing" (*res simplex*), which is intuited by the "naked" or "pure" intellect when it beholds one of the ideas that it has separated from existent things, an idea to which nothing truly in existence corresponds. The "unit" (*unitas*) as a "simple intellectual thing" (*res simplex intellectualis*) is therefore "not a quantity" (*non est quantitas*). However, because, as a simple thing, it has the distinction of "belonging" to both the spiritual and the bodily realms, it is a "simple common thing" (*res simplex communis*). The question of how the unit, as a simple intellectual thing and, therefore, as an indeterminate concept to which nothing determinate corresponds, is nevertheless able to "belong" to the bodily realm touches upon the insoluble problem of Cartesian philosophy, namely, how the relation between body and soul is to be conceived. Because Descartes encounters this problem originally in the mathematical realm, in the problem of reconciling the indeterminacy of the algebraic quantities with the traditional determinateness of number, the difficulty it presents to Descartes is not crucial. Indeed, Descartes' account of the pure intellect's use of the "power" of the imagination in the service of reconciling the mathematical problem of the relationship between determinate and indeterminate quantity, remains the first and to this day the only philosophical attempt to fix the exact meaning of the abstraction that yields the new, algebraic number concepts that are employed by modern "univer-

sal mathematics" (*mathesis universalis*), which is to say, by the new "symbolic" mathematics.

Descartes' account of the role of the imagination in addressing this problem focuses upon the "pure" intellect's use of the imagination's power to make visible what otherwise would remain unvisualizable to it (the intellect), the indeterminate "simple intellectual things" that it has separated from determinate things. The separation of these "pure" things occurs when the intellect refers only to itself and its own conceiving, which is "pure" in the precise sense that its "cognitive power acts alone" (*vis cognoscens sola agit*) in a manner that is entirely "divorced from the aid of any bodily image" (*absque ullius imaginis corporeae adjumento*) (Descartes 1701/1907: 37). Referring solely to itself, the "pure" intellect is not only "*bare*" of any immediate reference to the world, but it is also unable to get a hold of what it has abstracted by using the images the imagination offers it, because any connection between the determinacy of these images and indeterminacy of the "pure intellectual things" leads necessarily to contradictions. In the imagination, the "idea" of extension cannot be separated from the "idea" of body, or the "idea" of number from the "idea" of the thing enumerated, or the "idea" of unity from the "idea" of quantity.

In order to visualize and therefore be able to grasp as "abstract beings" (*entia abstracta*) the "simple intellectual things" it has abstracted from these very same determinate "ideas", the pure intellect must make use of the alien imaginative power – but *not* its determinate images – to represent to itself the indeterminate and therefore unvisualizable content of what it has separated. The pure intellect is able to do this, because even within the realm of the "alien" imaginative power, it retains the ability proper to it and foreign to this power, namely, of separating indeterminate "simple intellectual things" from determinate images. Thus, for example, when the "pure" intellect separates "fiveness" from five enumerated things and apprehends it as a "mere multitude" (*sola multitudo*) – and therefore as something that is separated from that which it "in truth" belongs to without being identical with (viz., the enumerated things) – the imaginative power, which ordinarily makes visible five units (perhaps as points), now makes visible something graphic, for instance (in the case at hand), the mark (*nota*) of the numeral that composes the pure concept of fiveness. The "pure" intellect, notwithstanding its involvement with the visible numeral, retains its capacity to separate indeterminate "ideas" from determinate ones, which means that it keeps distinct the determinacy of the numeral from the indeterminacy of its "idea" of "mere multitude". This enables the visible numeral to "represent" to the "pure" intellect the invisibility of some one of its "simple intellectual things", in the precise sense that the "pure" intellect is able to get a hold of the thing separated through the numeral's visibility, which it nevertheless keeps distinct from the "abstract being" of the "simple intellectual thing". Because what the numerals for general numbers or algebraic letter-signs for numbers in general represent are not the determinate things (units in the case at hand) from which the indeterminate "idea" ("fiveness" or "mere multitude" respectively in the cases at hand) has been separated, but this very "idea"

itself, Klein characterizes its representative function as "symbolic". It is precisely the "service" that the imagination's power provides to the "pure" intellect by making the determinate numerals, algebraic marks, and geometric figures visible to it as a symbolic representation of their indeterminate conceptual contents separated by the intellect, that Klein calls "symbolic abstraction", in recognition of (1) its distinction from Aristotelian abstraction (ἀφαίρεσις) and (2) its role in generating the symbols of the *mathesis universalis*.

Descartes' account of abstraction, however, does not reconcile the indeterminacy of the quantity treated by the *mathesis universalis* and the determinacy of the quantity proper to both enumerated things and the real figure of extended bodies. Both kinds of quantity are characterized by him as that kind of thing "which accepts the more or less" (*quod recipit majus et minus*) and that can therefore be called magnitude. The fact that Descartes stresses the non-identity of the indeterminacy of the "idea" of magnitude that is abstracted by the "pure" intellect and the determinacy of the "idea" of magnitude that is in the imagination raises the question of how he thinks "that nothing can be said of magnitudes in general which cannot also be ascribed to some specific form or other" (*nihil dici de magnitudinibus in genere, quod non etiam ad quamlibet in specie possit referri*) (Descartes 1701/1907: 49). Descartes' answer to this question appeals to both the "figurality" of the real extension of the magnitudes presented in the imagination and the fact that it is the *same* imagination that serves the "pure" intellect in its treatment of general magnitudes.

Descartes conceives of the "image-making organ itself, with the ideas existing in it", "as being nothing but a true body, really extended and having figure". Its extension and figure are received – literally – by the "impressions" that it receives from the part of the world that makes them, and it is precisely this, that the same corporeal nature of the world belongs to the imagination and all its ideas, which allows the *mathesis universalis* to grasp the "true world". The *mathesis universalis* can do this because the "figurality" of the magnitude that is depicted in the imagination is the *real* extension of a body that has been abstracted from everything except that it has figure, and it is precisely to this "figurality" that the *mathesis universalis* transfers what the "intellect allows us to say about magnitudes in general" (Klein 1968: 209). The conclusion that Klein draws from Descartes' philosophical reconciliation of the indeterminacy of general quantity (magnitude) with that of the determinacy of specific quantity (magnitude), is that extension has a twofold character in Descartes' thought: as the object of "general algebra", it is "symbolic"; as the substance of the corporeal world, it is real.

II. The Second Argument

The failure to reconcile the indeterminacy of the quantity treated by the *mathesis universalis* and the determinacy of the quantity proper to both enumerated things and the real figure of extended bodies is not Descartes' alone; it is shared by all who attempt to account for the unity of the formalized concepts employed by the symbolic calculus that makes modern logic and mathematics possible, together with

the formalized concepts at work in modern knowledge in general, on the basis of their putative abstraction from the natural beings accessible only to sense perception. And it is thus shared by all who – wittingly or unwittingly – continue to heed Giambattista Vico's call early in the eighteenth century for a "New Science" of the particular, the individual, the concrete in contrast with the abstract truths of the philosophers.

This new science, of course, is history, and, in the words of its originator, its pursuit of the non-abstract leads to what is "certain" (*Certum*) in direct opposition to the "common" (*commune*) and therefore abstract truths of the philosophers. Vico asserts that "*Certum* and *commune* are opposed to each other", and he concludes that by pursuing what is common, philosophy lacks certainty. Only history (including philology) deals with the certain, and most certain for humans is what they have made, *facta*, facts. It is in this vein that he writes

> The world of civil society has certainly been made by men, and that its principles are therefore to be found within the modifications of our own human mind. Whoever reflects on this cannot but marvel that the philosophers should have bent all their energies to the study of the world of nature, which, since God made it, He alone knows; and that they should have neglected the study of the world of nations or civil society, which, since man had made it, men could hope to know. (Vico 1744/1948: 96)

The non-abstract facts studied by Vico's science involve the "natural customs of men", which include in its scope a "history of human ideas" – which is not to be confused with a philosophical reflection on ideas. The proper field of the historian, who is the practitioner of Vico's New Science, is the customs, institutions, laws, and writings of humans, and, in understanding them, the historian's understanding and therefore "history" itself is supposed to yield precisely what philosophy lacks: truth that is certain and thus "truthful certainty".

This truthful certainty is the product of the historian's discovery of the laws governing the human world in contradistinction to the laws governing the natural world. This means for Vico that not only does the historian become the sole true philosopher, but, also, that the historian's work is in competition with the work of what in the seventeenth and eighteenth century was called "natural philosophy" – that is, the work of Descartes' and others' "mathematical physics" made possible by the new universal mathematics.

III. The Third Argument

Now a contemporary "historian of ideas" might justifiably object to the presentation so far of the "history" of Vico's New Science and therefore the origin of the modern discipline of history, by pointing out that Vico's formulation of the New Science is founded on an idea that is rejected by contemporary historians, namely, that of the "ideal eternal history" of nations established by divine providence. In contrast to Vico, the object of historical research and therefore the content of the truthful certainty of history is no longer understood by historians to be laws about "universal and eternal orders established by providence". Fair enough. However, the next claim I am about to make is one that no historian can justifiably object to, because it is not a claim about the truthful certainties established by the discipline of history but about

the origin of history as a discipline with a subject matter that is supposedly universal. It is a claim about what contemporary philosophers call the "problem" of history, a problem, therefore, which, properly speaking, is *not* a historical problem. This problem is not historical because what is called into question by it is precisely the justification of both the historian's claim to have cognition of something called history and also the universality of "history itself" that is the supposed "object" of this cognition.

My claim is this: Vico's "ideal eternal history" is derived from Descartes' idea of a universal mathematics, a *mathesis universalis*. As we have seen, universal mathematics on Descartes' understanding involves the intellect's cognition of its own powers of cognition, in a manner that yields concepts whose unity and therefore universality is indeterminate. This means that these concepts are neither particular nor individual and that they are therefore decidedly not concrete. Vico's "ideal eternal history" is likewise the object of the investigation of principles that are found only within "the modifications of our human mind", and as universal mathematics is to all specific mathematical disciplines, so, too, is the "ideal eternal history" to all the specific histories of nations. The "historical fact" about the general abandonment of Vico's "ideal of eternal history" by historians and their discipline, and, indeed, the appeal to any so-called historical fact, cannot address the next point I am about to make, namely: that the *indeterminate idea* of "historical universality" takes the place of Vico's "ideal of eternal history" in the science of history. This idea is indeterminate because, like Descartes' idea of the unity of the concepts of universal mathematics, it is not arrived at according to the principle of abstraction from the individual beings in the natural world around us but rather according to the principle "*verum ipsum factum*" ("the true is the made"), as in what is made by the human understanding. And, while it might seem that nothing could be more concrete than the human understanding – when measured by its immediate experience of this world around us – it is nevertheless precisely the "universality" that is supposed to characterize the subject matter of historical cognition that rules out the historian's claim to establish the truthful certainty on the basis of the non-abstract – and therefore, non-universal – being of the "history" of the customs, institutions, laws, and writings of humans.

The universality of history, in a word, is a product of the science of history, of the supposition that to this science's method of investigating the *universal* principles at work in the facts made by humans there corresponds a likewise *universal* object, namely, history "itself". As the "object" of the science of history, history is paradoxically understood to be neither a principle nor a fact, but, rather, it (history) is understood to be that about which the principles of historiography discover and articulate as the non-abstract, "truthful certainties" that compose the "facts" *of* history as a discipline. The question whether this supposition is warranted, whether it is in some sense *necessary* for humans to understand everything in the world, including themselves, from the perspective of universal history, is a question I suggest we take up in further discussions. By way of a conclusion, I would like to call attention to three consequences of the belief that the his-

torical perspective is indeed a belief that is necessary for our self-understanding as humans.

One: a fascination with the "otherness" of the past, which leads to the "discovery" of civilizations different from "our" Western civilization, each with different "values"; from the "certain facts" unearthed by the discovery of the past, humanity becomes fragmented into autonomously different "cultures", the existence of which becomes a fact as certain as that of truth itself being the function of the relativity of values proper to "different" cultures;

Two: the sense that the events in our life and the ideas we have about these events are an essential part of history's relentless motion from the past to the future, which is discernable as a movement that is manifest in the "trends" in which we are at once caught up in and, insofar as they can be observed, that we are supposed to orient our actions to as well as our ideas by.

And three: our self-understanding as completely historical beings, in the sense that "historicity" becomes our very "nature", such that our "self" is defined by its social, which is to say, historical, construction and our attempts to come to terms with this certain fact. Historicity in this sense does not mean tradition but rather our severance from tradition; with this severance, tradition assumes the guise of either a romantic notion or an academic ghost, as our invisible ties to the past give way to historical facts and the belief in their non-abstract truth, which is to say, give rise to what nowadays is called "historicism" by both those who judge this belief to be necessary to our proper self-understanding as humans, as well as by those who do not share this belief.

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VIENUMAS ANTIKOS IR NAUJŲJŲ LAIKŲ FILOSOFIJOJE IR VISUOTINĖS ISTORIJOS HIPOTEZĖ

Burt C. Hopkins

S u m m a r y

Šiame straipsnyje ginamos trys tezės. Pirma, kad abstrakčios antikos ir naujųjų laikų matematikos sąvokos yra fundamentaliai skirtingos. Bendras matematinių dalykų traktavimas antikos matematikoje akivaizdžiai nesuponuoja tokios matematinio objekto sąvokos, kokią numato naujųjų laikų matematikos metodas. Antra, šis abstrakčių matematikos sąvokų skirtingumas turi įtakos kitos, nematematinės disciplinos, o būtent – istorijos, supratimui. Trečia, šio skirtumo esminis aspektas yra klausimas, ar savęs kaip žmogaus suvokimui *būtina* suprasti save iš istorijos perspektyvos.

Pagrindiniai žodžiai: matematiniai objektai, skaičiaus sąvoka, istorija, savimonė.

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