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Comments on the Tom Rockmore’s article “Some consequences of Kant’s Copernican turn”

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What is the main idea of Kant’s transcendental philosophy and Copernican Revolution? The Kantian transcendentalism is the first theory of experience related to the solution of the semantic problem set in his letter to M. Hertz (02.21.1772) about the ground of the relation of our [a priori] representation to the object. There are two ways to solve it: realism (the empirical vector from the real things/objects to representations) and constructivism (the vector from the a priori form (or “representations”) to the objects). But Kantian transcendental idealism is not constructivism, because Kant keeps the empirical (realistic) vector by *affixing* our sensibility with things/objects and says that his theory of experience is an *empirical realism*. The Kantian transcendentalism as altered method of human thinking in metaphysics is associated with the splitting of the thing/object into the actual/real *object* (Kantian *thing-in-itself*) and *object of experience* (Kantian *appearance*), that mediate the relationship between things and representations, or the *transcendental triad* “object (thing-in-itself) – appearance – representation”. Unlike modern *epistemic constructivism* as a procedure for *constructing objects*, Kant develops *transcendental constructivism* in mathematics as cognition through construction of concepts in intuition, i.e. *constructivism* regarding *appearances*, but not *things-in-themselves*.

Keywords: transcendental idealism (Kant’s transcendentalism), Copernican turn, epistemic, constructivism, transcendental constructivism, thing-in-itself, object of experience (appearance)

In his earlier works [Rockmore, 2006; Rockmore, 2007] and in his paper (in this volume) T. Rockmore correlates Kant’s transcendental philosophy with his *Copernican revolution* and characterizes his transcendentalism as epistemic construc-

tivism and as a kind of German idealism. These characteristics are not entirely accurate. When interpreting Kant's transcendentalism, one should take into account the specifics of transcendental discourse and/or Kant's wordings such terms (notions) as "Copernican revolution/turn", "constructivism", "[transcendental] idealism", etc.

§1. Regarding the Kant's 'Copernican revolution'

The Copernican revolution appears as a Kantian solution to the *problem of conformity* from Kant's letter to M. Hertz of February 21, 1772. In this letter, in which the conception of "Critique of Pure Reason" (or the "idea of transcendental philosophy" [A1]) is presented, Kant defines the main task of his transcendentalism as a solution the following [semantic] *problem of conformity* of a priori representations to the real things/objects:

As I thought through the theoretical part, <...> I noticed that I still lacked something essential, something that in my long metaphysical studies I <...> had failed to consider and which in fact constitutes the key to the whole secret of metaphysics... I asked myself this question: *What is the ground of the relation of that in us which we call "representation" (Germ. Vorstellung) to the object (Germ. Gegenstand)?* [Kant, 2009, p. 312 (AA, 10: 130)].

According to Kant, "there are only two possible cases in which synthetic [a priori] representation and its objects can come together, necessarily relate to each other, and, as it were, meet each other [i.e. solution of the conformity problem]: either if the object [of experience] alone makes the representation possible (vector of cognition 'from [external] object to [internal] representation'; the representations corresponds to the objects; *empiricism*), or if the representation alone makes the object [of experience] possible (vector of cognition 'from [a priori] representation to object'; the objects corresponds to a priori representations¹; *apriorism*) (inserts in brackets mine. – K.S.)" [see Kant, 1998, p. 223 (B124–5)²; inserts in brackets mine. – K.S.)³.

However, "transcendental" solution as a way to solve the *conformity problem*, which Kant co-relates with his *Copernican Revolution* [BXXII f], differs from these two ways: he chooses a kind of *middle* path between empiricism and constructivism ([Kant, 1998, p. 264 (B167)]) and develops the *transcendental idealism*, which is compatible with *empirical realism* ([see Kant, 1998, p. 426 (A369–71)]). At the same time, when Kant says that objects must comply with human a priori principles, one should take into account that in the quotes above Kant speaks not about objects (*things-in-themselves*), but about *objects of experience* (or *appearances*), i.e.

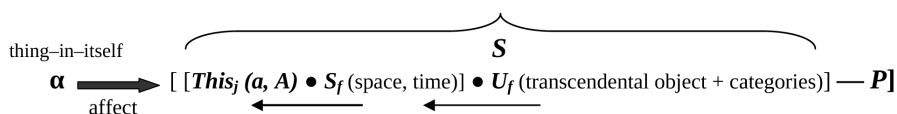
¹ See also: "...hence a *a priori* [forms of our sensibility and understanding] to which all objects of experience must therefore necessarily conform, and with which they must agree" [Kant, 1998, p. 111 (BXVIII)].

² All references to the Kant's *Critique of Pure Reason* are to the standard A/B pagination of the 1st (A – edition; 1781) and 2nd (B – edition; 1787) editions and cite the translation of *Critique of Pure Reason* [Kant, 1998].

³ We note that the second of them corresponds to the epistemic constructivism. Comp.: "we can cognize of things [germ. *Dingen*] a priori only what we ourselves have put into them" [Kant, 1998, p. 111 (BXVIII)].

the fact of difference between *objects* and *objects of experience*. Only *appearances* comply with a priori principles, but not real things/objects. In this way Kant is quite realistic and his transcendentalism is related not to the construction of *objects*, but only *objects of experience*, and thereby it's a constructivism regarding *appearances*, but not *things-in-themselves*. Thus, Kant's transcendental metaphysics is the "scientific" *metaphysics of appearances* and the Kantian concept appearance is the "key" to solving the problem of conformity: *appearance* lies at the basis of the relation between object and representation, it mediates the relation between them.

On the other hand, "Copernican revolution" is only a metaphor for Kant [Kant, 1998, p. 113 (BXXII f)]⁴. Its goal is not to completely overturn the relation between object and representation as it happens in case of the Copernican Revolution itself, especially since Kant's Copernican turn does not change radically the direction of cognition and Kant keeps the empirical (or realistic) vector "from object to representation" by affixing [Germ. *Affizierung*] our sensibility with things-in-themselves (see diagram):



[Here • denotes the relative functions of definition (design) of sensual perception/appearance *This_j (a, A)* by a priori forms of sensibility *S_f* and understanding *U_f* and the arrow (←) fixes the direction of subordination (conformity) of [empirical] things/objects and [a priori] representations]

Schema 1

While the goal of transcendental philosophy is to look for "transcendental condition(s)" [A106] behind the appearance: in the case of the Copernican *hypothesis* the Newton's *theory* of gravity, which justifies this hypothesis, acts as transcendental ground (condition). And as I showed earlier [Katrechko, 2015], Kant's transcendental philosophy, his "altered method of way of thinking" [BXVIII], which he correlates with *Copernican Revolution*, corresponds not to *epistemic constructivism*, but to *deductive-nomological model of science* (or *scientific explanation*) of C. Hempel – P. Oppenheim, which involves the use of theories as *relative a priori* (H. Reichenbach – R. Carnap) to explain the observed [appearances].

⁴ In this connection, I would like to draw your attention to the fact that for Kant not the Copernican hypothesis (or "Copernican turn") acts as an example, but rather Newton's theory [of gravity], which proves the hypothesis of Copernicus ([see Kant, 1998, p. 113 (BXXII f)]. Gravity is an entity, or thing-in-itself, of the observed appearances. And this is a more revealing example of the relation of appearance and thing-in-itself, than Kant's analogy "rainbow vs. drops of rain" from passage [Kant, 1998, p. 169 (B63)], because gravity is nothing at a phenomenal level (it is invisible) and does not resemble anything. Thus, the difference between the appearance and the thing-in-itself is perhaps more radical.

§2. About the Kant's transcendental constructivism

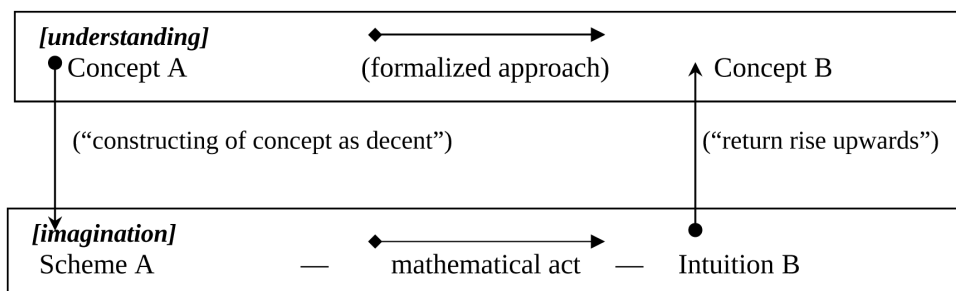
Kant's Transcendental constructivism differs from the understanding of [epistemic] constructivism in modern epistemology. Unlike [epistemic] constructivism as a procedure for *constructing objects* (for example, pointwise construction of a straight line ([see Kant, 1998, p. 249, 258 (B154, B138)], Kant in *Critique* uses the term *constructing* in describing mathematics (mathematical activity) as cognition “through construction of concepts in intuition” [Kant, 1998, p. 635 (B752); see also (B741–2)]. But “to construct a concept – means to exhibit a priori the [nonempirical] intuition [in universal validity, i.e. *scheme* [Kant, 1998, p. 273–4 (B179–81)]] corresponding to it (inserts in brackets are my. – K.S.)” [Kant, 1998, p. 630 (B741)]; inserts in brackets are my. – K.S.)⁵. In a sense, this is the antipode of modern constructivism, since Kant calls to check our rational constructions through sensual (imaginary) models. So in geometry, we model the concept [of a triangle] by its scheme, by drawing a triangle design (as picture), with which we prove mathematical theorems (for example, “how the sum of its angles might be related to a right angle” [Kant, 1998, p. 631 (B744)]).

Thereby, Kant's “constructivism”, or Kantian idea of *constructing concepts* stands as fundamental and key one for his conception (understanding) of mathematics⁶. In this case mathematics is conceived by Kant as a *complex* two-level (two-component) way of cognition. It begins with the creation by using definitions “pure sensible concept” [Kant, 1998, p. 274 (B180)]. Their specificity is that they are formed by “arbitrary synthesis” [Kant, 1998, p. 638 (B757)], i.e., contain some *mathematical* [mental] *action*. Further, when we *constructing concepts* we implement *descent* to the level of (quasi)sensuality (imagination) and relating of the concept to universally valid contemplation – *scheme*. Here, as if upon the reverse reading (from left to right) of the *Hume's principle*, happens the *decoding* (or construction) of the concept, i.e., the transition to a deep information level: from rational – declarative level of the concept on contemplative – procedural level of schemes. This can be represented as an expansion of the original abstract concept to lower – level objects that are in some [space-time] *environment* and with which we can perform certain mathematical operations (like drawing the line, division of numbers, etc.). We can say that in this “descent” through sensory *intuition* the

⁵ See: “Philosophical cognition is rational cognition from concepts, mathematical cognition that from the *construction of concepts*. But to construct a concept means to exhibit a priori the intuition corresponding to it. For the *construction of a concept*, therefore, a nonempirical intuition is required, which consequently, as intuition, is an individual object, but that must nevertheless, as the *construction of a concept (of a general representation)*, express in the representation universal validity for all possible intuitions that belong under the same concept. Thus, I construct a triangle by exhibiting an object corresponding to this concept, either through mere imagination, in pure intuition, or on paper, in empirical intuition, but in both cases completely a priori, without having had to borrow the pattern for it from any experience. The individual drawn figure is empirical, and nevertheless serves to express the concept without damage to its universality, for in the case of this empirical intuition we have taken account only of the action of constructing the concept, to which many determinations, e.g., those of the magnitude of the sides and the angles, are entirely indifferent, and thus we have abstracted from these differences, which do not alter the concept of the triangle» (italic mine. — K.S.) [Kant, 1998, p. 630 (B741–2)].

⁶ For more details see [Katrechko, 2015].

gress beyond the original concepts and the [synthetic] increment of knowledge occurs, as any [dynamic] *action* (as opposed to static concepts) is a *synthesis* of at least two views⁷. The result of this synthesis by reverse return (rise) on the cerebral (conceptual) level is fixed as a formal result of the construction. Schematically, mathematical acts can be represented as follows.



Schema 2

Thus, unlike the modern epistemic constructivism, Kant's transcendental constructivism acts as an inverse procedure for correlating concept and intuition, as "consideration the concept *in concreto*" [Kant, 1998, p. 631 (B744)], rather than embedding our a priori notions in objects/things. Therefore, the interpretation of *transcendental constructivism* as epistemic constructivism is not entirely accurate.

§3. About Kant's "Idea of Transcendental Philosophy"

The most important presupposition of Kant's *Copernican Revolution* and the cornerstone for his transcendentalism is distinction "thing-in-itself vs. appearance"⁸, according to it one should be able to see the "true" [aprioristic] causes/ground of what is happening behind, for example, such appearances as the movement of the Sun over the sky (in this case such ground is a gravity). Thus, the "idea of transcendental philosophy" [Kant, 1998, p. 127 (A1)] is given by the transcendental triad "object (thing-in-itself) – appearance – representation" in which appearance mediate the relationship between *thing-in-itself* and representations. On the one hand, the appearance differs from both thing-in-itself and the representation ["in us"], and, on the other hand,

⁷ In structural terms, any *action* can be represented as the synthesis of *pair* of representations initial state – final state (as the result of the action). Therefore, any action is synthetic. This clarifies the Kantian thesis that the expression " $5 + 7 = 12$ ", symbolizing the operation of *addition* of two numbers, has a *synthetic* character (see "Mathematical judgments are all synthetic" [Kant, 1998, p. 143 (B14–7)]). Its synthetic nature is connected with the *action* of addition, which is synthesized into a coherent whole the members of adding: "action" [addition] and gives the synthetic nature to the amount. Accordingly, the mathematical sign "=" means not equity of left and right sides of the formula, but the justification of the *transition* from the left side of the expression to its right side.

⁸ For more details see [Katrechko, 2014; Katrechko, 2018b]; see also [Katrechko, 2017; Katrechko, 2018a].

the appearance as “undetermined object of an empirical intuition” [Kant, 1998, p. 155 (B34)] is connected both with the real object and with the representation, while mediating their relation.

In this regard, Kant criticizes classical metaphysics (as ontology of things-in-themselves) and develops the theory of possible experience, or so-called descriptive metaphysics (P. Strawson) of appearance. We must limit the claims of the metaphysical reason, which is trying to make a breakthrough to the transcendent, to the cognition of the world itself. Kant teaches that we can study not the world itself and its structure, but only the “conceptual scheme” (D. Davidson) or “categorical grid” (R. Collingwood) of the description of the world⁹. It seems that this thesis is the leitmotiv of contemporary philosophy of science.

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⁹ See: “Descriptive metaphysics is content to describe the actual structure of our thought about the world, revisionary metaphysics is concerned to produce a better structure” [Strawson, 1959, p. 8].

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Комментарии к статье Тома Рокмора «Некоторые следствия коперниканского поворота Канта»

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Какова главная идея кантовской трансцендентальной философии и его коперниканского переворота? Кантовский трансцендентализм является первой теорией опыта, которая связана с решением семантической проблемы соответствия, изложенной в кантовском письме М. Герцу (21.02.1772) об основании отношения [априорных] представлений к предмету. Кант выделяет два способа ее решения: реализм (эмпирический вектор от реальных вещей/объектов к представлениям) и конструктивизм (вектор от априорной форм (или представлений) к объектам). Однако кантовский трансцендентализм не является идеализмом/конструктивизмом, поскольку Кант оставляет реалистический вектор воздействия вещей на нашу чувственность (resp. представления) и говорит, что его теория опыта является *эмпирическим реализмом*. Кантовский трансцендентализм как «измененный метод мышления» связан с расщеплением «вещи/объекта» на реальный предмет (кантовскую *вещь-в-себе*) и предмет опыта (кантовское *явление*), которая опосредует отношения между вещами и представлениями, или трансцендентальной триадой «объект (вещь в себе) – явление – представление». В отличие от современного конструктивизма как совокупности процедур конструирования объектов Кант развивает трансцендентальный конструктивизм в математике как познание посредством конструирования понятий в [чувственной] интуиции, т. е. конструктивизм относительно *явлений*, а не *вещей-в-себе*.

Ключевые слова: трансцендентальный идеализм (кантовский трансцендентализм), коперниканский переворот, эпистемический конструктивизм, трансцендентальный конструктивизм, вещь сама по себе, предмет опыта (явление)

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