

On the Very Idea of an Ideal Type¹

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The concept of ideal type plays an essential role in Max Weber's social science. Unfortunately Weber failed to explain exactly what an ideal type really is. This question cannot be answered as long as the source of the concept is not identified. We will examine some possible sources and argue that the work of the physicist and physiologist Hermann von Helmholtz is the most plausible source. Our purpose is to show that a consideration of several key essays by Helmholtz shows what Weber meant with his concept of ideal type: namely the result of a specific kind of induction.

I.

In 1904 Max Weber published his essay “The ‘Objectivity’ of Knowledge in Social Science and Social Policy” on the occasion of assuming the editorship of the *Archive for Social Science and Social Policy* [*Archiv für Sozialwissenschaft und Sozialpolitik*]. With his essay Weber wanted to shape the journal as an organ of a value-free social science as well as to put forward his own draft of a social science in which the concept of ideal type would play an essential role.

Weber introduced the concept of ideal type in his critique of Carl Menger's so-called abstract theory of economics (Weber 2012: 123-124; 1949: 87-89; 1982: 187-190).² Although Menger had drawn a fundamental methodological distinction between nomological and historical knowledge, his theory proceeded along the lines of the exact natural sciences, in an attempt to deduce the multiplicity of social life from laws. By taking this course, Weber argued, Menger failed to grasp the definitive property of his own economic concepts:

¹ Thanks are due to Gary Hatfield, Tom Kaden, Kai Müller, Guy Oakes, Hubert Treiber and Angelika Zahn.

² Unfortunately the available English translations of Weber's essay are not always precise enough to offer an adequate understanding of Weber's thought. For the sake of convenience, we quote Weber (2012) and additionally mark Weber (1949) and the German original Weber (1982).

a special case of a kind of concept formation that is distinctive, and to a certain extent indispensable, to the sciences of human culture.

According to Weber, the abstract theory of economics is “an example of those syntheses that are usually called ‘*ideas*’ of historical phenomena” (Weber 2012: 124; 1949: 89; 1982: 190). Such syntheses give us “an *ideal* image of what goes on in a market for goods when society is organized as an exchange economy, competition is free, and action is strictly rational” (Weber 2012: 124; 1949: 89-90; 1982: 190). Such an ideal image is a “mental image”, because it “brings together certain relationships and events of historical life to form an internally consistent cosmos of *imagined* interrelations” (Weber 2012: 124; 1949: 90; 1982: 190). Substantively, this construct has the character of an *utopia* produced by the *mental* accentuation of certain elements of reality (Weber 2012: 124; 1949: 90; 1982: 190). The relation of this utopia to the empirically given data consists solely in the fact that where hypothetical relationships of the kind referred to by the abstract construct are discovered or supposed to exist in reality, at least to some extent, “we can pragmatically *clarify* the *distinctive character* of that interrelation and make it understandable, by means of an *ideal type*” (Weber 2012: 124-125; 1949: 90; 1982: 190).

Like the “idea” of the historically given modern organisation of society as a market economy, we can, for example, by analogy to “exactly the same logical principles” develop “the idea of the medieval ‘city economy’” by forming the concept “city economy” not as the “*average*” of the economic factors that actually exist in all the cities observed, but as an “*ideal type*” (Weber 2012: 125; 1949: 90; 1982: 190-191). An ideal type is formed by means of “a one-sided *accentuation* of *one* or a *number of* viewpoints and through the synthesis of a great many diffuse and discrete *individual* phenomena (more present in one place, fewer in another, and occasionally completely absent), which are in conformity with those one-sided, accentuated viewpoints, into an internally consistent *mental image*” (Weber 2012: 125; 1949: 90; 1982: 191). In its conceptual purity, this “mental image” cannot be found anywhere in empirical reality. Thus historical research faces the task “of establishing, in each *individual case*, how close reality is to, or how distant it is from, that ideal image” (Weber 2012: 125; 1949: 90; 1982: 191).

On the one hand, Weber emphasized that an ideal type is not a “schema” into which reality should be fitted as a “*specimen*”. Rather it “has the status of a purely ideal *limiting* concept against which reality is *measured* – with which it is *compared*” (Weber 2012: 127; 1949: 93; 1982: 194). Thus Weber differentiated the ideal type from the generic concepts of natural science, the conceptual model that the abstract theory of economics attempted to follow. On the other hand, Weber emphasized that an ideal type should not be identified with an “idea of what *ought to be*, of an ‘ideal’”, because it is “ideal” solely in “the

strictly *logical* sense of the term” (Weber 2012: 126; 1949: 91-92; 1982: 192). Weber emphasized this point because of his intent to establish a value-free social science.

Hence Weber tried hard to emphasize the purely logical meaning of his concept of ideal type. In accordance with his sharp distinction between practical value judgments, with which certain aspects of reality are assessed in the light of normative ideals, and theoretical value relations, in which certain aspects of reality are selected as objects of scientific research because of their cultural significance, the ideal of the ideal type was not a normative basis of judgements but only a logical standard of comparison: “relating reality to ideal *types* (in the logical sense of the word) by means of logical *comparison*” must be distinguished clearly from “*judging* reality evaluatively on the basis of *ideals*”: “An ‘ideal type’ in our sense of the term is totally indifferent to *evaluative* judgments; it has nothing to do with any other ‘perfection’ than a purely *logical* one” (Weber 2012: 130; 1949: 98-99; 1982: 200).

For Weber this distinction seemed to be clear. However, the fact that he connected the concept of ideal type with the concept of idea calls to mind the Platonic idea and its normative and metaphysical implications. Weber insisted that he was not following Plato. His concept of idea doesn’t refer to “a ‘true’ reality that exists beyond the fleeting phenomena”; accordingly he emphasized that an ideal type is certainly “not ‘true’ reality” (Weber 2012: 127; 1949: 93-94; 1982: 194-195). However, he failed to explain exactly who the referent of his concept of idea is. This also holds true for his later publications. The result: endless controversy over the question what an ideal type really is – a discussion that has led nowhere.

This question cannot be answered as long as the source of the concept is not identified. In the following account, we will examine some possible sources and argue that the work of the physicist and physiologist Hermann Helmholtz (after 1883, Hermann von Helmholtz) is the most plausible source. Our purpose is to show that a consideration of several key essays by Helmholtz shows what Weber meant with his concept of ideal type: namely the result of a specific kind of induction.

II.

Weber was silent on the source of the concept of ideal type. This is all the more curious since “The ‘Objectivity’ of Knowledge in Social Science and Social Policy” is a programmatic piece. It is precisely in this essay that the reader could expect references. However, in contrast to Weber’s other methodological writings this essay contains no more than a few allusions and only

one footnote. In this footnote Weber noted that in “all important respects” his essay built on “the writings of modern logicians”: Wilhelm Windelband, Georg Simmel and, especially for his purposes, Heinrich Rickert (Weber 2012: 100; 1949: 49-50; 1982: 146). This hint is misleading as regards the concept of ideal type, which does not appear, either explicitly or implicitly in Windelband’s or Simmel’s writings. Moreover, Rickert, whom Weber followed in sundry ways (Wagner and Härpfer 2014), even seemed to be an adversary of any concept of type.

In Rickert’s book *The Limits of Concept Formation in Natural Science*, published in 1902, the concept of ideal type doesn’t occur literally. But there is a passage which can be interpreted in this respect (Rickert 1902: 360-363). Rickert discussed the concept of “type” and distinguished two meanings. On the one hand, this word refers to what is “characteristic for the average of a group of things or proceedings”. In that case, it means “at times something like specimen of a general generic concept”. On the other hand, it refers to “something like an exemplar or model”. However, these meanings can be identified only if one sees “in the content of a general concept a model or an ideal” to which the “single individuals” – conceived as the “imperfect copies of the general concept” – orient themselves. This reasoning makes sense only on the “ground of a Platonic conceptual realism”, according to which “the general values” are “the true reality” in the sense of “the general reality”. This leads “adherents of a natural scientific universal methodology” to understand natural scientific concepts as “metaphysical realities”. Without these “metaphysical premises” the “typical as the average” must be distinguished from the “typical as the model”. This is because “the ‘typical’ manifestation of the content of a general concept” can never be “the ‘typical’ manifestation of an ideal”.

On the condition of a sharp distinction between both meanings, Rickert was willing to acknowledge that the conception of the typical as model is “not altogether mistaken when applied to some historical objects”. For example, if one claims that Goethe or Bismarck are “typical Germans”, this could mean “that in their singularity and individuality they are models, and because of this they must be relevant for all people, so that as types they become historical individuals as well”. The typical as the average also comes into question with regard to “relative historical concepts”. However, even if a confusion of “relevance for all” with “in common with all” is avoided, the concept of type is in the last analysis “totally useless” for a “really comprehensive concept of the historical individual”. This is because “history is certainly not exclusively concerned with objects that are types in the one sense of the word or in the other”.

As regards the ideal type, therefore, there is only a very limited sense in which it can be claimed that Weber began with Rickert: namely insofar as Rickert had shown that a type cannot be a metaphysically charged general

concept but nevertheless comes into question for the definition of a historical individual. This interpretation is confirmed by a letter Weber sent to Rickert shortly after the publication of “The ‘Objectivity’ of Knowledge in Social Science and Social Policy” (Weber 1904). It reveals that Rickert seems to have written Weber – in a letter that is unfortunately not extant – concerning his “agreement with the conception of the ‘ideal type’”, which he hardly would have done if this “conception” were his own. However, Rickert must have had scruples concerning the word ideal type. In any case, Weber answered that he considered a “similar category” necessary in order to be able to distinguish between practical “value judgements” and theoretical “value relations”. What one called this category was “relative inconsequential” to him. He used the term “ideal type” because “in colloquial language one speaks of an ‘ideal borderline case’, the ‘ideal purity’ of a typical event, and an ‘ideal construction’ etc., without implying that something *ought* to be the case. Further what Jellinek (Gen[eral] Theory of the State) called an ‘ideal type’ is perfect only in a *logical sense*, not in the sense of a *model*”. Weber noted that the category needed to be “further clarified”, because in his essay it still posed all sorts of “undifferentiated problems”. With his reference to Jellinek, Weber brought another author into play. Although Jellinek was not a modern logician, but a jurist, in his book *General Theory of the State*, published in 1900, the concept of ideal type appears literally.

Jellinek had distinguished between an “*average type*” and an “*ideal type*” (Jellinek 1900: 32-33).³ According to him the concept of “*ideal type*” refers to the “perfect essence of a genus”. Either it is conceivable “in a Platonic manner as a transcendent idea which appears in individuals only in an imperfect way”; or it is conceivable “following Aristotle, as an effective and shaping power which designs the singular specimen of the genus”. In any case it has an “essentially teleological meaning”: It is “the τέλος of each thing and each human appearance to give it an expression“. This type is “not something that exists, but something that ought to exist.” Therefore it is a “standard for judging what exists”: What is in accordance with it is “good” and has the “right” to exist. Otherwise it has to be rejected and superseded. “From Hellenic philosophy through the scholasticism of the Middle Ages until present,” this type has “continuously engaged the whole scientific thinking”. Concerning the theory of the state, in which Jellinek was especially interested, the conception of an ideal type leads to the attempt to “find the best state and measure the existing Governmental institutions against this type”. Accordingly, this type is either

³ In German there are two words for “ideal type”, namely “idealer Typus” and “Idealtypus”. Weber only used “Idealtypus”. Jellinek used both words synonymously.

a “product of free speculation (as it occurs particularly in political novels)”; or “existing states or some of their institutions are reconstructed as an ideal type”. The value of such ideal types for political action may be immense; however, it is quite modest for “theoretical-scientific knowledge” whose object is “what exists” and not “what ought to exist” – the “given world”, not a “prospective world that does not exist”.

Jellinek’s ideal type is a case of exactly that identification of general generic concepts with normative perfection whose metaphysical premises Rickert noted in 1902. Weber certainly did not follow this interpretation. The only point of contact could have been the formal mode of construction which Jellinek had found in the speculations and reconstructions of theories of the state. In any case, as his letter to Rickert shows, Weber must have seen the possibility of conceiving what Jellinek called an ideal type not as a model, but as something that is perfect in a purely logical sense. Note that the letter in question does not even prove that Weber took the word ideal type from Jellinek. In a 1911 commemorative address, he claimed that he had received “insights of immense importance” from Jellinek. However, he did not mention the ideal type (Weber 1926: 484).

III.

As far as we can see, research on the conceptual history of the ideal type hasn’t gone beyond Jellinek. However, the fact is that this concept occurs in the science and philosophy of that time. It appears, for example, in Alois Riegl’s lectures “The Origin of Baroque Art in Rome”, held between 1894 and 1902, where it is only mentioned: In the middle of the 15th century – before buildings with a central layout were understood as an “ideal” – the early Renaissance had already discovered that “the hall with one nave would be the ideal type of an ecclesiastical longhouse” (Riegl 1908: 111). However, Riegl is not a possible source for Weber. His lectures were first published in 1908, and Weber himself wrote in a letter to Georg Lukács that he had not read Riegl’s work before 1913 (Weber 2003a).

The concept of ideal type also occurs in Jonas Cohn’s book *General Aesthetics*, published in 1901, where it is also explained (Cohn 1901: 175-178). Cohn distinguished between an “average type” and an “ideal type”. The latter expresses “the essence” of something in an “especially pure” manner. The “approximation of a specimen to this ideal type makes it appear beautiful”. This is because “beautiful specimens of something differ from the average by reason of their perfectly developed and perfectly proportioned elements and by reason of the salient appearance of all the properties which create the beauty of this thing”.

Cohn then noted that in most cases the “doctrine of the ideal type” purported “more”: namely, that “we perceive in beautiful beings, so to speak, the blueprint of nature in the most pure manner, whose complete realization otherwise is hindered by disturbing conditions”. The “metaphysical foundation” of this view is the belief that “the true essence of single things consists in the fact that they are instances of general concepts”. It is “the task of each specimen to give an expression of such concepts that is as pure as possible”. Cohn rejected this “conceptual realism”, but referred to other writings on aesthetics in which the view that “beauty can be stated as an approximation to an ideal type” is entangled with “a manifold of other elements”. Cohn’s assertions are interesting, because they broach the possibility of a non-metaphysical use of the concept of ideal type without combining it – like Rickert – with the conception of a model. However, the question of whether Cohn is a source for Weber cannot be answered with confidence. Weber could have become acquainted with Cohn’s book through Rickert. Although Rickert’s discussion of the concept of type didn’t mention Cohn, a few pages later in his account of the distinction between scientific and aesthetic truth he referred in a footnote to Cohn’s book (Rickert 1902: 387). Weber does not mention Cohn before 1913, and says nothing about the concept of ideal type (Weber 2003b; 2003c).

Jellinek’s claim that the concept of ideal type continuously engaged the whole scientific thinking since the days of Hellenic philosophy must be regarded as an exaggeration. However, the concept really seemed to be widely held in aesthetics since Renaissance. A stock-taking would certainly be beyond the scope of this essay. However, we can consider a tradition that comes into question as a source, because it represented an attempt to emancipate art from metaphysics. For this purpose we can follow Erwin Panofsky’s study *IDEA*.

According to Panofsky, in the Renaissance, Giorgio Vasari prepared the ground for the conception that the idea of beauty is not a supernatural a priori which, so to speak, resides in the mind of the artist. On the contrary, it is produced a posteriori by the artist himself by a synoptic “inner vision” that chooses among single cases “the most beautiful things” (Panofsky 1968: 60-64). Combined with this was the conception that the idea which the artist obtained by observation “revealed the actual purposes of nature ‘creating according to laws’”. Therefore “‘subject’ and ‘object’, mind and nature do not stand in hostile or even opposite relation to each other”. On the contrary, “the Idea, itself derived from experience, necessarily corresponded to experience” (Panofsky 1968: 64). These conceptions lead to a shift in meaning. Now one “identified the world of ideas with a world of heightened realities” and the “concept of the ‘Idea’ was [...] transformed into the concept of the ‘ideal’ (*le beau idéal*)”: “This stripped the Idea of its metaphysical nobility but at the same time brought it into a beautiful and almost organic conformity with nature:

an Idea which is produced by the human mind but, far from being subjective and arbitrary, at the same time expresses the laws of nature embodied in each object [...] by intuitive synthesis” (Panofsky 1968: 65).

Classicism – and especially Giovanni Pietro Bellori with his 1664 essay “L’Idea del Pittore, dello Scultore e dell’Architetto” – elevated these conceptions to a “system”. According to Panofsky, Bellori was convinced that an idea has no “metaphysical origin”: “Instead, the artistic Idea itself is said to originate from sensory perception, except that in it sensory perception seems brought to a purer and higher form” (Panofsky 1968: 106). Bellori conceived an idea as “a perfect notion of all things, starting with the observation of nature”, i.e. “the Idea was nothing else than the experience of nature ‘purified’ by our mind”, with which “this transformation of the Idea into the *beau idéal* was officially proclaimed” (Panofsky 1968: 106, 108-109). Panofsky additionally emphasizes that Bellori “was not so shortsighted as to claim an absolutely universal (i.e., undifferentiable) validity for the Ideal; rather it is individualized insofar as the ‘Idea’ is a generic notion which – while having general validity with its class – lends truly ‘exemplary’ expression to certain *types* of habitual appearance (such as strength, grace, fieriness) as well as to types of psychological states (such as anger, grief, or love)” (Panofsky 1968: 244).

Gary Hatfield has shown that this classicist system can be found in the 19th century in the work of the physiologist and physicist Hermann Helmholtz, especially in his lectures “On the Relation of Optics to Painting” which he delivered between 1871 and 1873 in Berlin, Düsseldorf and Cologne (Hatfield 1993; 1990: 165-234). For Helmholtz, too, the painter has to produce “idealised types” when he “seeks to produce in his picture an image of external objects” (Helmholtz 1995a: 281 [1903a: 97-98]). Whereas an uneducated observer requires nothing more than “an illusive resemblance to nature”, an observer whose taste in works of art has been more finely educated will require something more than “a faithful copy of crude Nature”:

To satisfy him, he will need artistic selection, grouping, and even idealisation of the objects represented. The human figures in a work of art must not be the everyday figures, such as we see in photography; they must have expression, and a characteristic development, and if possible beautiful forms, which [...] produce a vivid perception of any particular aspect of human existence in its complete and unhindered development (Helmholtz 1995a: 281 [1903a: 97-98]).

After having discussed the physiological foundations of the perception of forms and colours, Helmholtz drew the conclusion that the “sensual distinctness” of a painting is “by no means a low or subordinate element in the action of works of art”; on the contrary it is the very element that first and

foremost shows a work of art in the sense of that idealisation the well-educated observer expects:

What effect is to be produced by a work of art, using this word in its highest sense? It should excite and enchain our attention, arouse in us, in easy play, a host of slumbering conceptions and their corresponding feelings, and direct them towards a common object, so as to give a vivid perception of all the features of an ideal type, whose separate fragments lie scattered in our imagination and overgrown by the wild chaos of accident. It seems as if we can only refer the frequent preponderance, in the mind, of art over reality, to the fact that the latter mixes something foreign, disturbing, and even injurious; while art can collect all the elements for the desired impression, and allow them to act without restraint (Helmholtz 1995a: 307-308 [1903a: 134-135]).

This desired impression will be greater “the deeper, the finer, and the truer to nature is the sensuous impression which is to arouse the series of images and the effects connected therewith”; it must “act certainly, rapidly, unequivocally” (Helmholtz 1995a: 308 [1903a: 135]). Thus the peculiarities of the painter’s technique, which physiological investigation had shown, are often closely connected with the highest problems of art. Helmholtz even thought that “the last secret of artistic beauty – that is, the wondrous pleasure which we feel in its presence – is essentially based on the feeling of an easy, harmonic, vivid stream of our conceptions, which, in spite of manifold changes, flow towards a common object, bring to light laws hitherto concealed, and allow us to gaze in the deepest depths of sensation of our own minds” (Helmholtz 1995a: 308 [1903a: 135]).

Thus Helmholtz provided a scientific basis for the correspondence of subject and object, mind and nature, which the Renaissance and Classicism had claimed. Moreover he perpetuated the epistemological function ascribed to art, namely to realize laws of nature through idealisation. It remains to be seen whether Vasari, Bellori or other Renaissance and Classicism aesthetes could, in the last analysis, emancipate themselves from metaphysics. In any case, in Helmholtz’s work are no indications of a conceptual realism, according to which the true nature of single things consists in the fact that they are instances of general concepts, with each specimen giving an expression of this concept as pure as possible. Helmholtz was an outstanding exponent of the mechanistic world view (Schiemann 1997). When he spoke of disturbing conditions he certainly didn’t mean something which hindered the complete realization of a blueprint of nature in the sense of a Platonic idea. On the contrary, he meant physical phenomena which can – like the physical phenomena they are disturbing – be explained by laws expressed in differential equations;

for example, the Kelvin-Helmholtz principle of instability in fluid dynamics which Helmholtz discovered at the same time (1868-1873) he delivered his lectures on the relation of optics to painting (Helmholtz 1882a; 1882b).

IV.

Like Jellinek, Helmholtz was not a modern logician. However, his work is definitely a plausible source for Weber. Just as in his book *On the Sensations of Tone as a Physiological Basis for the Theory of Music*, published in 1863, he applied his physiological research to aesthetics in his lectures “On the Relation of Optics to Painting”. In his sociology of music, written between 1909 and 1913, Weber made full use of the third edition of Helmholtz’s book on the sensations of tone (Helmholtz 1870; 1895; Weber 2004). There are no references to Helmholtz’s lectures on painting in Weber’s work. However, it is plausible to suppose that Weber was acquainted with them.

This supposition is supported by the fact that Helmholtz’s lectures on painting were published in a new edition of a collection of his popular lectures and readings in 1903, i.e. one year before the publication of Weber’s essay “The ‘Objectivity’ of Knowledge in Social Science and Social Policy”. In his critique of Karl Knies, which he wrote at the same time, Weber at least referred to two texts included in this collection. In the first part of his critique of Knies, published in 1905, he mentioned Helmholtz by his name in order to refer to his lecture “On the Relation of Natural Science to Science in General”. In addition, it is quite probable that he referred to Helmholtz’s studies “On the Conservation of Force” and “Robert Mayer’s Priority”. He returned to these studies in “Science as Vocation” where he also referred to Helmholtz’s autobiographical reflections and the quality of his teaching (Weber 2012: 30, 33, 338-340; 1982: 44, 50, 586; 590; Helmholtz 1995b [1903b]; 1995c [1903c]; 1903d; 1995d [1903e]). In the second part of his critique of Knies, published in 1906, Weber also mentioned Helmholtz by his name referring to his study “On the Origin and Significance of Geometrical Axioms” (Weber 2012: 74; 1982: 115-116; Helmholtz 1995e [1903f]). Although it is possible that Weber used earlier editions of these texts, his multifaceted knowledge of Helmholtz’s work suggests that he was acquainted with Helmholtz’s lectures on painting, too.

In “The ‘Objectivity’ of Knowledge in Social Science and Social Policy,” Weber drew more heavily on concepts employed by natural scientists than the secondary literature suggests. In order to explain his understanding of causality, Weber adopted the theory of objective probability developed by Johannes von Kries, a physiologist and student of Helmholtz; once again, Weber didn’t mention the author by name (Weber 2012: 118, 126-127; 1949: 80, 92-93;

1982: 179, 192-194; Kries 1888; Neumann 2009; Heidelberger 2010). Weber was even willing to follow a “leading natural scientist”, in order to base his own social science – contra Rickert – on an “*astronomical*” method of knowledge. This natural scientist was the physiologist Emil Du Bois-Reymond (Weber 2012: 114; 1949: 73; 1982: 172; Du Bois-Reymond 1874; Albrecht 2010; Wagner and Härpfer 2014). In the light of this consideration, Joachim Radkau’s thesis is quite plausible that Weber, having no equal dialogue partner in the natural sciences, had found in the late Helmholtz an “imaginary counterpart” (Radkau 2005: 627). Hatfield has not only reconstructed Helmholtz’s “science of aesthetics” but also his “aesthetics of science”, i.e. “his ‘classicist’ aesthetics of scientific explanation” (Hatfield 1993: 524). Thanks to Hatfield’s analysis we can concentrate on a few of Helmholtz’s most important positions.

In his critique of Knies, Weber claimed that Helmholtz had distinguished the “groups” of the “natural sciences” and the “sciences of the human spirit” “according to their *object*” (Weber 2012: 30; 1982: 44).⁴ This is true, but only half the story. Far from being an adherent of a natural scientific universal methodology, Helmholtz argued that different methods arise as a result of the differing complexity of objects of investigation. In his address “On the Relation of Natural Science to Science in General”, delivered in Heidelberg in 1862, he designated these methods as “*logical induction*” and “*aesthetic induction*” (Helmholtz 1995b: 85 [1903b: 171]).⁵ This difference not only throws light on Weber’s discussion of the generalizing mode of concept formation, employed by the abstract theory of economics, but also facilitates an understanding of his concept of ideal type.

According to Helmholtz, scientific knowledge begins with the discovery of laws and causes (Helmholtz 1995b: 83 [1903b: 169]). The first step in the “logical” processing of material is “to connect like with like” and “to elaborate a general conception” that “takes a number of single facts together” and “stands as their representative in our mind” (Helmholtz 1995b: 83 [1903b: 169]). When it embraces a number of objects, we call it a “general conception”, or the “conception of a genus”; when it embraces a series of incidents or occurrences, we call it a “law” (Helmholtz 1995b: 83 [1903b: 169]). When we “combine the results of experience by a process of thought, and form conceptions”, we not only bring our knowledge into a form in which it can be “easily used and easily retained”; we also “enlarge” it, inasmuch as we feel ourselves

⁴ Mistaken translation: „Geisteswissenschaften“ is translated „sciences of the human spirit“ instead of „moral sciences“ (Helmholtz 1995b: 79 [1903b: 163]; 1971: 125). Hatfield argues that Helmholtz might have appropriated the concept of „*Geisteswissenschaften*“ as the German translation of John Stuart Mill’s concept of „moral sciences“ (Hatfield 1993: 543-544).

⁵ Hatfield also speaks of „artistic“ induction (Hatfield 1993: 546).

entitled “to extend the rules and the laws we have discovered to all similar cases that may be hereafter presented to us” (Helmholtz 1995b: 84 [1903b: 170]). The “law of refraction”, for example, not only embraces “all cases of rays falling at all possible angles on a plane surface of water”, but it includes “all cases of rays of any colour incident on transparent surfaces of any form and any constitution whatsoever”; moreover, it includes not only “the cases which we ourselves or other men have already observed”, but we can apply it to “new cases, not yet observed, with absolute confidence in the reliability of our results” (Helmholtz 1995b: 84 [1903b: 169-170]).

Logical induction causes no difficulties concerning objects and occurrences for which the like and the unlike can be made out clearly and combined into well-defined concepts (Helmholtz 1995b: 84 [1903b: 170]). This is the case in physics and physiology. In “complicated” cases, however, difficulties occur. Consider a man whom we know as ambitious. We shall perhaps be able to predict with tolerable certainty that in his actions he will follow his ambition. But we cannot define with absolute precision what constitutes an ambitious man, or by what standard the intensity of his ambition is to be measured; nor can we say precisely what degree of ambition must operate in order to motivate his actions under particular circumstances: “Accordingly, we institute comparisons between the actions of the man in question, as far as we have hitherto observed them, and those of other men who in similar cases have acted as he has done, and we draw our inference respecting his future actions without being able to express either the major or the minor premiss in a clear, sharply-defined form” (Helmholtz 1995b: 84 [1903b: 170]). Although this “intellectual process” is “identical” with that of a logic induction, “our decision proceeds only from a certain psychological instinct, not from conscious reasoning” (Helmholtz 1995b: 84 [1903b: 171]).⁶

According to Helmholtz, this latter kind of induction, which can “never be perfectly assimilated to forms of logical reasoning, nor pressed so far as to establish universal laws”, plays a most important role in human life. This is because the “whole process by which we translate our sensations into perceptions depends upon it,” and it also plays a leading part in “psychological processes” (Helmholtz 1995b: 85 [1903b: 171]). Moreover, it is actually employed in the moral sciences. While the natural sciences are able to perform “inductions” up to “sharply-defined general rules and principles”, the moral sciences mostly have to do “with conclusions arrived at by psychological instinct” (Helmholtz 1995b: 85 [1903b: 172]). The historical sciences, for example, must verify the authenticity of their sources in order to discover the often

⁶ The German word „instinct“ is „*Tact*“ or „*Tactgefühl*“ (Helmholtz 1903b: 171-172).

entangled and diverse motifs of individuals and people.⁷ This is only possible by means of psychological instinct: “It is only possible to pass judgment, if you have ready in your memory a great number of similar facts, to be instantaneously confronted with the question you are trying to solve. [...] Of course memory alone is insufficient without a knack of everywhere discovering real resemblance” (Helmholtz 1995b: 86 [1903b: 172]).

In contrast to logical induction, which succeeds in building sharply-defined general concepts, Helmholtz called this kind of inference “*aesthetic induction*”, because “it is most conspicuous in the higher class of works of art” (Helmholtz 1995b: 85 [1903b: 171]). According to Helmholtz, it is an essential part of an artist’s talent to reproduce by words, by form and colour, or by tones the external indications of a character or a state of mind, and by a kind of “intuitive intuition” to grasp the necessary steps by which we pass from one mood to another: “the works of great artists bring before us characters and moods with such a lifelikeness, with such a wealth of individual traits and such an overwhelming conviction of truth, that they almost seem to be more real than the reality itself, because all disturbing influences are eliminated” (Helmholtz 1995b: 85 [1903b: 172]). Along these lines, a decade later, in his lectures “On the Relation of Optics to Painting”, Helmholtz speaks of “ideal types”. Subsequently he “came to posit the same aesthetic aim for art and for science: to find the lawful, to discover the ideal within the variant” (Hatfield 1993: 557; Helmholtz 1995f [1903g]).

V.

It is well known that Weber followed Rickert’s distinction between natural sciences and historical sciences. Nevertheless, he apparently did not regard Helmholtz’s distinction between natural sciences and moral sciences as incompatible with Rickert’s position. Notwithstanding his emphasis on the different epistemological interests of natural sciences and historical sciences, Rickert also took note of the objects of investigation. If he emphasized an antinomy between the natural sciences and the historical sciences, he simply meant that there are two logically different ways to consider reality; either with regard to the general, in order to formulate laws, or with regard to the particular, in order to conceptualize historical individualities (Rickert 1902: 28-29, 227-228; 1986: 28, 33-34). However, he stressed that the expression of

⁷ This passage (Helmholtz 1903b: 172) has not been translated into English in Helmholtz (1995b: 85). It has been translated in Helmholtz (1971: 132).

this circumstance differs vastly from the reality of academic life. Reality obviously is not completely indifferent to these two epistemological interests (Rickert 1902: 29). There are objects, such as atoms, that can be investigated only by the natural sciences and other objects, such as Goethe or Bismarck, that can be investigated only by the historical sciences. Finally, there are things accessible to the concepts of both types of science. This is the case with human society, which can be regarded in a generalizing or in an individualizing manner (Rickert 1902: 293-295).

Thus Weber seems to have understood Helmholtz's distinction as a supplement, useful in as much it provided a differentiation within the generalizing conception of reality. Some sciences succeed in formulating sharply defined universal laws. Other sciences only arrive at ideal types; because of the complexity of their objects, they cannot perform logical inductions but only aesthetic inductions. Weber could place the social sciences in this latter group of sciences, since the abstract theory of economics had shown, unwittingly but unequivocally, that the generalizing conception of society obviously doesn't get beyond ideal types.⁸ In any case, Weber didn't understand the "concept of 'laws'" in the "narrowly" defined sense of the natural sciences, but in a "widely" defined sense that includes "regularities that are not even quantifiable, and therefore cannot be expressed numerically" (Weber 2012: 115; 1949: 74; 1982: 173). Such regularities could be formulated by means of ideal types, and either within the scope of a generalizing investigation of reality as the "aim" of knowledge or within the scope of an individualizing investigation of reality – in which Weber was especially interested in "The 'Objectivity' of Knowledge in Social Science and Social Policy" – as an "instrument" of knowledge (Weber 2012: 118; 1949: 80; 1982: 80). The social science Weber wanted to pursue in 1904 was an individualizing science: "the construction of abstract ideal types can only be considered a tool, never an end [in itself]" (Weber 2012: 126; 1949: 92; 1982: 193).⁹

Aesthetic induction was not a fully elaborated method that Weber could simply have adopted in order to underpin his conception of social science. Nevertheless, we should not disregard the fact that he followed Classicist aesthetics when he introduced his concept of ideal type. His use of an aesthetic metaphor is evident. He emphasized that an ideal type is a *mental image* [*Gedankenbild*] in

⁸ In contrast to Weber, Menger may have understood the concepts of his theory as "metaphysical realities" (Rickert 1902: 360). Mäki claims: "while Weber says that the ideal type 'is a conceptual construct [*Gedankenbild*] which is neither historical reality nor even a »true« reality', we might want to say that, in a sense, Menger's concepts depicting exact types seek to display the 'true' reality, namely the universals of economic life" (Mäki 1997: 483).

⁹ Mistaken translation: „nicht als Ziel“ [not as an end] is translated „never an end“.

the sense of an *ideal image* [*Idealbild*] in which one conceptualizes the idea of a certain part of reality by means of a mental accentuation of one or several aspects of similar objects. Moreover, this image is a *sketch or drawing* [*Zeichnung*]. One has to *sketch or draw* [*zeichnen*] it, as Weber himself repeatedly claimed. Unfortunately neither English translation captures the metaphorical sense of this passage (our emphasis and insertions of *zeichnen* and *Zeichnung* in brackets):

To analyse a further example: it is possible, in exactly the same way, to *depict* [*zeichnen*] the ‘idea’ of ‘craft’ in [the form of] a utopia, by one-sidedly accentuating the consequences of certain features that can be found diffusely among craftsmen from quite different epochs and countries, combining them into an internally consistent ideal *image*, and relating them to an expression of ideas that seems to manifest itself in [that ideal image]. One can then further attempt to *depict* [*zeichnen*] a society in which all branches of economic and even intellectual activity are governed by maxims that appear to us to be an application of the same principle which characterizes ‘craft’, elevated to the status of an ideal type. One can then confront this ideal type of ‘craft’ with its antithesis: the corresponding ideal type of a capitalist ordering of industry and trade, abstracted from certain features of modern large-scale industry; and then go on to try to *depict* [*zeichnen*] the utopia of a ‘capitalist’ culture, that is to say, a culture dominated solely by the interest in getting a return on [the investment of] private capital. [In this utopian ideal type], the distinctive character of a number of scattered features of material and non-material cultural life would have to be accentuated and combined into an ideal *image* that we would regard as [internally] consistent. This would be an attempt to *depict* [*ein Versuch der Zeichnung*] an ‘idea’ of capitalist culture (Weber 2012: 125; 1949: 90-91; 1982: 191-192).

It is not a coincidence that in this context Weber repeatedly used the terms *zeichnen* and *Zeichnung*, even though he rarely uses this metaphor elsewhere.¹⁰ The remainder of Weber’s essay is an attempt to translate this metaphor into scientific concepts. In this project, he was unsuccessful. In fact, his summary “sample” exhibits an “infinite complexity” that makes even the most modern logician shudder (Weber 2012: 133; 1949: 103; 1982: 205).

¹⁰ This metaphor appears in Weber’s study “The Protestant Ethic and the Spirit of Capitalism” which he published at the same time (1904/1905) in the *Archive for Social Science and Social Policy*. In this study the ideal type is characterized as a picture: “The following picture has been put together as an ideal type from conditions found in different industrial branches and at different places” (Weber 2005: 149; 1988: 51). Weber also wrote that “the ideal of the educated and highly civilized Puritan woman” is “drawn in Baxter’s funeral oration for Mary Hammer” (Weber 2005: 250; 1988: 189).

VI.

It should be evident that more research is needed to receive at a full understanding of Weber's concept of ideal type. First, an analysis in the history of ideas should clarify the contemporary dissemination of this concept, especially in aesthetics (Glaser 1913: 165; Panofsky 1915: 127-128). Interestingly enough, the concept also occurred in biometrics which Francis Galton and Karl Pearson established in late 19th century (Galton et al. 1901: 1). In addition, the distinction between logical and aesthetic induction requires investigation. This includes John Stuart Mill's influence on Helmholtz as well as Helmholtz's conception of psychological instinct [*Tact, Tactgefühl*] (Conrat 1904; Schiemann 1997: 259-264, 423-425; Treiber 2005: 100-101). The importance of these themes is not confined to the history of science. The affinity between scientific and artistic knowledge, which Helmholtz had pointed out, is obviously of enduring significance. For example, in several contributions to *Nature*, the art historian Martin Kemp has claimed that scientists and artists follow the same "structural intuition" (Kemp 2005: 308).

Moreover, complementary methods in the natural sciences must be considered. This holds especially for experiments and thought experiments as well as for models based on abstraction, isolation, and idealization (Hüttemann 1997; Kühne 2005). The affinity of these procedures to Weber's ideal type is well known (Hempel 1952; Pabjan 2004; Saegesser 1975). Less well known is the fact that Ludwig Boltzmann and Heinrich Hertz, a student of Helmholtz, used the concept of model and the concept of "mental picture" synonymously (D'Agostino 1990; Regt 1999; 2005; Scheibe 2007). It may not be possible to establish whether Weber was acquainted with this "*Bildtheorie*". Nevertheless, it should be clear that his conception of the social sciences cannot be adequately understood without embedding it in a broader context that includes the natural sciences as well as aesthetics.

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