Intersubjectivity and physical laws in post-Kantian theory of knowledge: Natorp and Cassirer

Scott Edgar

October 2014.

1. Intersubjectivity and physical laws in post-Kantian theory of knowledge.

Consider the claims that representations of physical laws are intersubjective, and that they ultimately provide the foundation for all other intersubjective knowledge. Those claims, as well as the deeper philosophical commitments that justify them, constitute rare points of agreement between the Marburg School neo-Kantians Paul Natorp and Ernst Cassirer and their positivist rival, Ernst Mach. This is surprising, since Natorp and Cassirer are both often at pains to distinguish their theories of natural scientific knowledge from positivist views like Mach's, and often from Mach's views in particular. Thus the very fact of this agreement between the Marburg School neo-Kantians and their positivist stalking horse points to a deep current of ideas than runs beneath the whole of the post-Kantian intellectual context they shared.

In fact, the view that representations of physical laws are intersubjective was ubiquitous in German-language philosophy in the late nineteenth and early twentieth centuries. Neo-Kantians and non-neo-Kantians alike, as well as philosophers and scientists on both sides of the debate between psychologism and anti-psychologism, maintain versions of this view. For example, Hermann von Helmholtz, the physicist and physiologist who set the program for the movement of physiological neo-Kantianism, maintains that representations of physical laws are "objective," and so too intersubjective (Helmholtz 1977 [1878]). Alternatively, Hermann Lotze, whose anti-psychologistic metaphysics stood as an early and influential alternative to both neo-Kantianism and psychologism, defends the view that representations of physical laws are "universal" in the sense that they are intersubjective (Lotze 1884 [1874]: 2-3).

In fact, Lotze's discussion can give the impression that the ubiquitous post-Kantian link between physical laws and intersubjectivity has a very simple explanation:

physical laws are universal, and so they are precisely what can be represented universally. But of course, this is just a pun. Physical laws are (or aim to be) "universal" in the sense that they are exceptionless in space and time, whereas we want a philosophical explanation for why representations of them would be "universal" in the sense of being intersubjective. These two uses of the word 'universal' go back to Kant.[1] But regardless of pedigree, equivocating between two different meanings of a word does not constitute a satisfying philosophical explanation. What we want to know is: why are representations of laws that are exceptionless in space and time intersubjective?

I aim to explain why, for Natorp and Cassirer, representations of physical laws are intersubjective. The guiding idea of the explanation I will offer is so simple as to be banal: physical laws are (or aim to be) valid across all regions and scales of space and time. But then, they are precisely what different subjects, with different positions in space and time, can all share identical representations of. Unfortunately, matters are not so simple. That simple idea turns out to be very difficult to articulate in a way that is consistent with Natorp's and Cassirer's (and even Mach's) accounts of the subject of knowledge -- that is, the knower. Thus my task in what follows is to develop an account of that guiding idea that is consistent with their views.

To that end, I begin in §2 by placing this view in the context of their respective accounts of the objectivity of natural scientific knowledge. §3 considers Natorp's and Cassirer's accounts of subjectivity -- that is, their accounts of the epistemic idiosyncrasy that some representations have, and that prevents those representations from being shared or available to all subjects universally. In §4, I argue that Mach provides surprising resources for further developing the idea of that epistemic idiosyncrasy. In the context of

1 Compare Kant's gloss on 'universal' when he is giving the marks of a priori knowledge at B3-4 of the first *Critique* with his use of the term when discussing consciousness in general in §§19-20 of the *Prolegomena*.

a discussion of Mach, I introduce the idea of what I call a *point of view*. I argue that it explains why certain experiences fail to be intersubjective, and also why representations of physical laws *are* intersubjective.

§5 faces the difficulty of interpreting these ideas in a way that is consistent with Natorp's, Cassirer's, and even Mach's views: I consider a simple explanation for why certain representations have points of view; I argue that neither Mach, Natorp, nor Cassirer can accept that explanation; and I consider their accounts of the relation between representations with points of view and the subjects who have those experiences. Finally, §6 makes it clear just how differently these ideas are developed in Natorp's and Cassirer's hands, as opposed to Mach's. Finally, I conclude in §7 by briefly considering the significance of the underlying agreement between Mach, Natorp, and Cassirer.

Finally, before anything else, I must stress how limited the ambitions of the present essay are. A completely convincing account of Natorp's and Cassirer's accounts of physical laws and intersubjectivity would have to do two things. First, it would have to trace the development of those accounts through all of their relevant writings. Second, it would have to attend to the differences between Natorp's and Cassirer's views, as well as their views' similarities. I make no attempt to do either of these things in the present essay. In what follows, I will draw from only enough texts to start sketching a picture of Natorp's views from the 1880s to the 1910s and Cassirer's views in 1910: namely, Natorp's 1887 essay, "On the Objective and Subjective Grounds of Knowledge," his 1888 book, *Introduction to Psychology according to the Critical Method*, his 1912 expansion of that book, *General Psychology according to the Critical Method*, and Cassirer's 1910 *Substance and Function*. Further, I will attend principally to points of overlap between Natorp's and Cassirer's views, often eliding details where their views differ. For those two reasons, the interpretation I defend below is necessarily provisional.

2. Three elements of Natorp's and Cassirer's conceptions of objectivity.

Enough throat-clearing. The question of why, for Natorp and Cassirer, representations of physical laws are intersubjective is ultimately a question about their views of the objectivity of natural scientific knowledge. We need to begin by seeing how that question emerges from their remarks about objectivity. There are multiple elements to both Natorp's and Cassirer's views of objectivity. Three of those elements are especially relevant for present purposes.

First, Natorp and (even more clearly) Cassirer maintain that our knowledge is objective when when we represent objects determinately -- that is, when we represent objects with definite conditions for their identities. On this view, having objective knowledge of an object requires that we have criteria for determining that an object we represent is the object it is, and not some other object.

Although Natorp and Cassirer have somewhat different views on this point, both maintain roughly that the identity conditions of objects are established in the context of a framework or structure that different individual objects are located in. The identity conditions of objects are given by different locations in this framework. Since those locations are well-defined and unique, they can constitute well-defined and unique identity conditions for objects.

The second element of both Natorp's and Cassirer's accounts of objectivity concerns the framework or structure within which objects have well-defined identity conditions. For both Natorp and Cassirer, those frameworks are constituted by -- and so the objectivity of our knowledge is established by -- relations in our experience that are constant or invariant over changes in the content of that experience. In other words, the framework is constituted by, and so our knowledge's objectivity is established by, *laws* in our experience. As Natorp puts it in 1887, "The objectification of appearance is carried out in the reduction to law; there is no other way" (Natorp 1981 [1887]: 255).[2]

2 And again in 1888:

Cassirer has a somewhat more nuanced articulation of the idea that laws are objective, but he ultimately shares that view with Natorp. In a way that Natorp does not, Cassirer emphasizes that what is objective in our experience are *constant relations* between experiences. Throughout *Substance and Function*, Cassirer emphasizes the idea that objectivity consists in, as he variously puts it, constancy, invariance, permanence, or fixity in our experience. He emphasizes this idea again and again. For example,

> Whenever a *system of conditions* is given that can be realized in different contents, there we can hold to the form of the system itself as an invariant, undisturbed by the difference in contents, and develop its laws deductively. In this way, we produce a new "objective" form. . . . (SF 1923 [1910]: 40)

But for Cassirer, the most significant expression of the idea that objectivity consists in constant relations within experience is his doctrine of "the universal invariants of experience". The universal invariants are those relations within our experience that do not just remain constant throughout all testing of a particular theory at a particular stage in science's evolution through history. They remain constant throughout the entirety of that evolution from theory to theory. The universal invariants are thus the relations that turn out to be constant across all changes in scientific theories throughout the entire history of science. But what is more, for Cassirer, these universal invariants are what ultimately constitute the object of knowledge. That is, it is ultimately in virtue of them that we can know *objectively* (SF 1923 [1910]: 268-270).

Consequently, for Cassirer what is objective in our experience are the constant and permanent relations within it. But those constant and permanent relations are,

---

> As to the final objective grounds of the truth of knowledge, the issue called for is nothing other than the reduction of phenomena to laws of the highest order; the objectifying process would drive to the highest laws, which originally determine all objectivity of knowledge. (Natorp 1888: 105)

And in 1912: "Knowledge of objects is based on knowledge of laws. . ." (Natorp 1912: 154). That passage comes from a section of Natorp's *General Psychology* that he titles, none too subtly, "Objectification = knowledge of laws."

paradigmatically, physical laws. Thus for Cassirer, as for Natorp, our representations of physical laws are objective.[3]

The connection between the first and second elements of Natorp's and Cassirer's theories of objectivity should be clear. Recall, the first element was that objects have their unique identity conditions defined by locations within some framework or structure. The second element is that the objectivity of our knowledge consists in constant, permanent relations within experience -- paradigmatically, physical laws. For both Natorp and Cassirer, those physical laws, the constant, permanent relations within experience established by mathematical natural science, constitute the framework within which objects' identity conditions are defined.

The third element of Natorp's and Cassirer's theories of objectivity is intersubjectivity. Neither Natorp nor Cassirer emphasizes this idea as clearly as they emphasize the idea that laws or constant relations within experience are objective. Nevertheless, it is clear that both think objective knowledge must be independent of whatever representations happen to occur in the mind of an individual subject. They thus maintain that objective knowledge cannot be particular to an individual subject, and in that sense idiosyncratic.

Natorp is especially clear about this in his 1887 essay:

> Objective validity signifies a validity that is independent of the subjectivity of knowledge -- this is well established. What is to be objectively valid is to be valid apart from the givenness of its representation in this or that consciousness. (Natorp 1981 [1887]: 252)

First, Natorp tells us that objective knowledge must be "independent of the subjectivity of

3 For example, Cassirer says of our representations of objects that:

> The "things" that arise henceforth, prove -- the more distinctly their real meaning is comprehended -- to be metaphorical expressions of permanent connections between phenomena according to law, and thus expressions of the constancy and continuity of experience itself. (SF 1923 [1910]: 276-7)

knowledge." He glosses that by saying that objective knowledge must be "valid apart from the givenness of its representation in this or that consciousness." That is, the "independence" of knowledge consists in the fact that it is independent of the minds of individual knowers. As he says later in the same essay, objective knowledge is knowledge that is "unanimously valid for all subjects in all circumstances" (Natorp 1981 [1887]: 256]). In other words, objective knowledge is intersubjective.

For his part, Cassirer is clear enough in *Substance and Function* that he has the same view. Like Natorp, Cassirer thinks objective knowledge is independent of the individual knower. He says, for example,

> No judgement of natural science is limited to establishing what sensuous impressions are found in the consciousness of an individual observer at a definite, strictly limited point of time. (SF 1923 [1910]: 242)

So for Cassirer, objective knowledge is independent of whatever representations happen to occur in the minds of individual knowers. In just that sense for Cassirer, objective knowledge is intersubjective.

However, with this third element of Natorp's and Cassirer's theories of objectivity, we arrive at our principal question. It is clear how the first element of their theories of objectivity relates to the second: laws and constant relations within experience constitute the structures within which objects' identity conditions are defined. But what connection is there between the second element and the third? On their view, representations of physical laws are objective, and objective representations are intersubjective. So for both Natorp and Cassirer, representations of laws must be intersubjective. But what philosophical explanation is there for this claim? What underlying commitments justify it for them?

3. Subjectivity and epistemic idiosyncrasy.

If we want to answer these questions about Natorp's and Cassirer's accounts of

intersubjectivity, recent work in historical epistemology suggests a fruitful interpretive strategy for us to pursue. Lorraine Daston and Peter Galison (2007/2010), and most recently Ian Hacking, (forthcoming), have argued that when historical figures appeal to a distinction between subjective and objective representations, the meaning of the term "objective" is fixed only in relation to the meaning of the term "subjective." Reciprocally, the meaning of the term "subjective" is often fixed in relation to the term "objective." Thus the concepts *objectivity* and *subjectivity* must be understood in relation to one another, as a pair (Daston and Galison 2007/2010: Ch. 1).

In fact, Natorp himself suggests that his view of objectivity can be understood only in relation to his view of subjectivity. In his 1887 essay, after he has begun the task of articulating his view of objectivity, including how it consists in intersubjectivity, he explicitly raises the question of why our representations of laws are objective and so too intersubjective. Then, to begin answering the question, he writes: "the answer to this will be found in the most direct way if we first succeed in understanding the meaning of that subjectivity which must be overcome in the representation of the object (Natorp 1981 [1887]: 256). What follows is an important, if opaque, sketch of how Natorp conceives of subjectivity, details of which he would start to elaborate only in his book on psychology the following year. For now, what is important to notice is just that Natorp himself acknowledges that in order to understand his views of objectivity and intersubjectivity, we must first understand his view of subjectivity.

It is worth considering why the meaning of the concept objectivity can be determined fully only in relation to a corresponding concept of subjectivity. "Objectivity" is a term of epistemic success. It connotes an epistemic achievement. In contrast, "subjectivity" is a term of (at least partial) epistemic failure. Philosophers use the term to express a threat to epistemic success or an obstacle that epistemic achievement must overcome. But there is no way to understand what the epistemic achievement really amounts to without also understanding the epistemic threat or

obstacle that it overcomes. To the extent that philosophers have different anxieties about different threats or obstacles to epistemic success, they will have different conceptions of exactly what kind of achievement that epistemic success amounts to. Thus, for example, Daston and Galison argue that as philosophers' and scientists' conceptions of subjectivity evolved over the course of the first half of the nineteenth century -- as they came to have different anxieties about threats to knowledge -- that evolution was accompanied by a parallel evolution in philosophers' and scientists' conceptions of objectivity.

Further, this point about how the concept of objectivity gets its meaning only in relation to the concept of subjectivity applies even more forcefully to the concept of intersubjectivity. For intersubjectivity is an epistemic achievement that overcomes the epistemic threat posed by subjectivity. Consequently, if we want to understand the details of how Natorp and Cassirer conceive of intersubjectivity and why they think representations of physical laws are intersubjective, we must also understand their conceptions of subjectivity.

As a first pass at those conceptions of subjectivity, Natorp and Cassirer make it clear that, for them, subjective representations are *idiosyncratic*. The mark of subjectivity is thus that subjective representations vary from one individual to another. On this view, representations are subjective if there is no shared standard with which we can judge that one individual's representation is correct and another individual's different representation is incorrect. The idiosyncrasy of such representations constitutes a threat to epistemic success: it means the representations fail to be shared by all individuals, and so fail to be intersubjective. In this respect at least, Natorp's and Cassirer's conceptions of subjectivity are entirely characteristic of post-Kantian theories of knowledge.

Thus Natorp, in his 1887 essay, explicitly contrasts objective (and so intersubjective) representations with representations that are valid only "for this or that consciousness" (Natorp 1981 [1887]: 252) -- that is, representations that are idiosyncratic, that vary from individual to individual, and so are subjective. Further, he is

explicit that what overcomes that subjectivity is a shared standard that is independent of any individual knower's representations, and that can be used to assess and compare different knowers' different representations (Natorp 1981 [1887]: 252-253). In *Substance and Function*, Cassirer puts these points in almost identical terms. He says that "subjectively valid" representations are those "concerning momentary and *individual* experience" and that are "accidentally found together in *individual* consciousness" (SF 1923 [1910]: 245; emphasis added). He explicitly contrasts these subjective representations with representations that are "based in the object itself and independent of the condition of this or that sensing individual" (SF 1923 [1910]: 246).

Thus for Natorp and Cassirer, subjective representations are idiosyncratic; they vary from one individual to another. Still, this point on its own does not give us a full enough account of their conception of subjectivity to shed much light on their conceptions of intersubjectivity. In particular, it is not enough to explain why, on their view, our representations of physical laws are intersubjective. That explanation will come only with a much more detailed account of how Natorp and Cassirer think about the idiosyncrasy that subjective representations exhibit. It will be provided by an account of idiosyncrasy, as they conceive it, that makes clear exactly how that idiosyncrasy is overcome by our representations of physical laws.

4. Mach and the idea of a point of view.

Ernst Mach -- precisely the figure both Natorp and Cassirer come back to again and again as a stalking horse -- provides an illustration of exactly the conception of idiosyncrasy that we need.

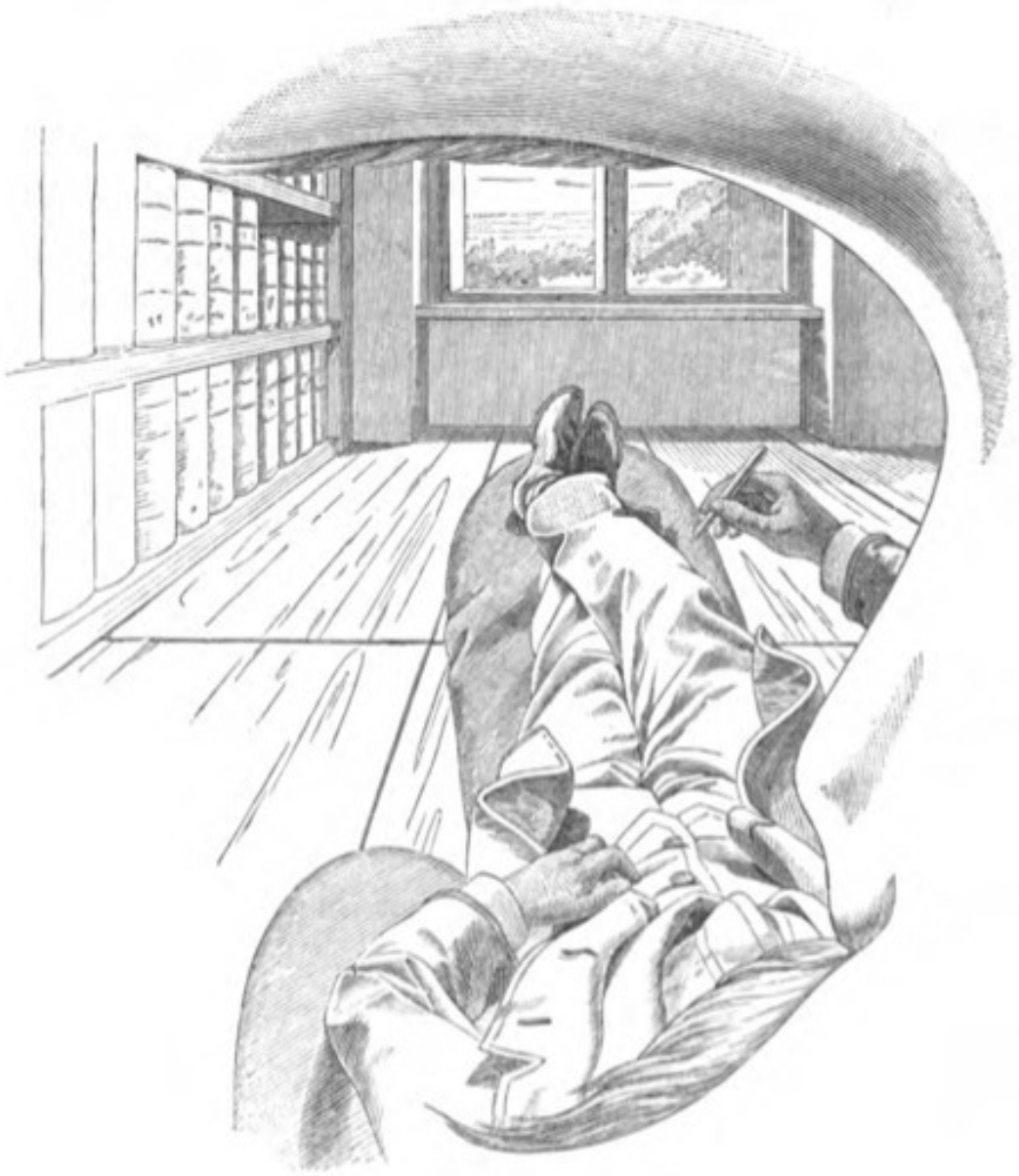
On its face, this is an implausible interpretive claim. First, Mach is precisely the kind of positivist that Natorp takes as his stalking horse in his 1887 essay. Second, one of the central philosophical aims of his 1888 and 1912 books on psychology is to defend the view that psychology has a method that is fundamentally unlike the methods of natural

science, a view that Natorp clearly intends to contrast with Mach's view that psychology has essentially the *same* method as natural science. Third, Mach is a radical empiricist, and has precisely the kind of empiricist, abstractionist account of concept-formation that Natorp criticizes explicitly as early as 1887 and that Cassirer takes to be his principal stalking horse in *Substance and Function*.[4] Fourth, Mach has a very different conception of physical law than Natorp or Cassirer: on his view, laws are nothing but relatively stable relations between experiences that we attend to because it is useful for us to do so. But while Cassirer acknowledges that a physical law's fruitfulness for further scientific inquiry can be a reason to accept it (SF 1923 [1910]: 317-318), neither he nor Natorp accepts the view that a law's usefulness for practical human ends constitutes a reason for science to accept it. Finally, Mach's theory of knowledge is an example of exactly the kind of psychologism that Natorp and Cassirer reject decisively throughout their writings, and at least in the case of Natorp's early arguments against psychologism, it is likely that Mach is above all the figure he has in mind as the target of his arguments.[5]

But be that as it may, Mach illustrates a conception of idiosyncrasy that provides exactly what we are looking for -- an explanation of why representations of physical laws overcome the idiosyncrasy of subjective representations. When I say that Mach *illustrates* that conception of idiosyncrasy, I mean it literally. He illustrates it with an image that appears in the introductory chapter of his 1884 *Contributions to the Analysis of Sensations*.

4 For a detailed interpretation of Cassirer that foregrounds his rejection of the abstractionist account of concept-formation, see Heis 2014.

5 For an attempt to make sense of Natorp's arguments against psychologism, see Edgar 2008.



For Mach, this image is an illustration of what (relatively) subjective experience looks like. That is, he understands this to be an illustration of something close to immediate sensory experience. It is his sketch of what he sees from his left eye, as he sits in his office. He is looking out and seeing, in the extreme foreground, the side of his own nose; then, in the mid-ground, the length of his own body as he lies on some kind of lounge; and finally, in the background, he is looking out over his own feet to the windows

on the opposite wall.

However, Mach's image also illustrates an important conception of the idiosyncrasy of subjective representations. Mach's picture illustrates what I will call a point of view. The image's point of view consists in the perspectival structure exhibited by the representations pictured. That is, it consists in the limited, partial spatio-temporal structure those representations exhibit. In general, we can say that a set of representations has a point of view just in case the regions and scales of space and time they represent are partial and limited. That is, they do not represent space and time in their complete, all-encompassing totalities. Thus, for example, in Mach's illustration, we get representations of the region of space in one part of his office, and since it is a static image, only a single instant of time.

Representations that have a point of view in this sense will be idiosyncratic in just the way we are interested in. Since points of view are constituted by spatio-temporal structures that are limited and partial, it is always possible to have multiple points of view. But if there are multiple possible points of view, those points of view will be different -- that is, they will represent different regions and scales of space and time. Consequently, different points of view will have different representations of whatever objects they represent. For example, representations of Mach's office from a point of view that is just outside the window in the background of his image would be different than the representations pictured in his image, structured as they are by their own point of view. But then, since different points of view will have different representations of the objects they represent, those representations will fail to be identical. The representations will not be shared by different points of view; they will be particular to their points of view, and thus will fail to be intersubjective. In just that sense, representations that have points of view will be idiosyncratic.

However, if points of view have the idiosyncrasy exhibited by subjective

representations, then we can start to see exactly how representations of physical laws overcome that idiosyncrasy. We can start to see exactly why representations of physical laws might be intersubjective.

Physical laws are (or aim to be) universal, that is, exceptionless in space and time. That is, the more universal a law is, the more regions and scales of space and time it is valid for. If a law were absolutely universal, it would be valid for all regions and scales of space and time. But the more regions and scales of space and time a law is valid for, the more *points of view* it will be valid for. Since if the same law holds for different regions and scales of space and time, different points of view that represent these different regions and scales will nevertheless represent the same law. Thus despite their differences, different points of view will nevertheless represent the *same* law. In just that sense, representations of physical laws are what overcome the epistemic idiosyncrasy exhibited by points of view. In just that sense, representations of physical laws are intersubjective.

5. The relation between a point of view and the subject of knowledge.

The key idea in the account I have just given is the idea of a point of view -- that is, the idea of experiences that represent only limited, partial regions and scales of space and time. Those representations, in virtue of their limited perspectives, will be idiosyncratic, and so they will fail to be intersubjective. At the same time, representations of physical laws -- laws that are (or aim to be) valid for all regions and scales of space and time -- will not have that idiosyncrasy, and so will be intersubjective.

However, if the key idea is simply the idea of experiences that represent only limited, partial regions and scales of space and time, isn't there a much simpler way of thinking about them? And so isn't there a much simpler way of explaining why representations of physical laws are intersubjective?

Why not say this? There are a plurality of cognitive subjects -- that is, knowers --

at various points in space and time. These subjects' cognitive capacities are limited in at least this sense: their immediate or nearly immediate apprehension of the world around them is limited; that is, they do not immediately apprehend the totality of space and time as soon as they open their eyes, but rather have relatively immediate access only to what is in their vicinity. In this case, these subjects' representations will be of limited regions in space and time -- that is, they will have points of view and the epistemic idiosyncrasy that comes with them. However, despite the fact that these subjects are situated at different places in space and time, they can all share identical representations of physical laws, since physical laws are (or aim to be) valid for all regions and scales of space and time.

The simplicity of this picture is attractive. Unfortunately, it is not a picture that we can attribute to Natorp or Cassirer, or even Mach. The pictures makes at least two assumptions that all three figures reject.

First, the simple picture assumes that space and time exist, with determinate points in them that different subjects could be located at, and further, that space and time exist prior to or independently of the experience of the subjects located in them. Space and time must exist independently of the subjects' experience of them, because this picture invokes them to explain the limited, perspectival character of the subjects' experience. If space and time depended for their existence on the subjects' experience, they could not then provide a (non-circular) explanation of the perspectival character of that experience.

Second, the simple picture assumes that different subjects exist, and that their existence is independent of their experience. Once again, the subjects' existence must be independent of their experience, since the picture is invoked to explain the character of that experience.

Mach, Natorp, and Cassirer reject both of these assumptions. In *Analysis of Sensations*, Mach defends the view that (in a process that is partly unconscious and partly conscious) we construct our experience of space and time from simpler, more immediate

sensory representations of extents and durations. But what is more, on the radically anti-metaphysical stance that he articulates, there is no space or time independently of or beyond the experiences we construct. Thus for Mach, there is no space or time that is independent of experience, and that we could appeal to in order to explain experience's character.

At the same time, for Mach the subject is nothing but a provisional, if useful, collection of simple, sensation-like constituents of experience, constituents he calls "elements." The collection includes elements such as "colors, sounds temperatures, pressures, spaces, times, and so forth," as well as "moods of mind, feelings, and volitions" (Mach 1890 [1884]: 2) -- the same kinds of elements that Mach thinks also make up objects. Some of these elements are collected together and put under the label "ego" or "I", because doing so makes it easier and more efficient for us to track important patterns and changes within experience. For example, Mach, suggests, grouping certain elements together under the label "I" makes it easier for us to reduce the number of painful elements in our experience and increase the number of pleasant elements (Mach 1890 [1884]: 19). Finally, if the subject is nothing but a useful collection of elements that are themselves constituents of experience, then the subject does not exist independently of experience. Thus Mach cannot accept appeals to the subject to explain anything about experience's character.

Although Natorp and Cassirer have very different views than Mach, they nevertheless also reject that picture. For both Natorp as early as his 1888 *Introduction to Psychology* and Cassirer in *Substance and Function*, space and time are the space and time represented in natural scientific experience. (See, for example, the treatments of space in Natorp 1888: §§10-11 and Cassirer 1923 [1910]: Ch. 3). Both reject as precritical metaphysics the idea that there could be any space or time independently of our natural scientific experience.

Both likewise reject the view that the subject exists independently of experience.

On the view that Natorp defends in his 1888 and 1912 books on psychology, the subject is "reconstructed" within experience. In contrast, on his view, objective knowledge is "constructed" within experience. It is constructed, when the natural scientist begins with the limited and only partial lawlike relations within experience, and then establishes further lawlike relations of ever-increasing universality. Although, on Natorp's view, science will never succeed in establishing laws of absolute universality and so will never establish any absolutely objective knowledge, it nevertheless aims at that ideal.

Natorp is less clear than we might like about how philosophy and psychology "reconstruct" the subject of knowledge, but his view is clear enough for our purposes. Like the method of constructing objective knowledge, the method of reconstructing the subject of knowledge begins with experience containing limited and only partial lawlike relations. But then, the reconstructive method seeks to analyze apart these lawlike relations, revealing the less determinate experiences that had been made objective by the lawlike relations. Consequently, the reconstructive method seeks representations of lawlike relations of ever-*decreasing* universality. As the method isolates experiences of decreasing universality, those representations will be more and more subjective. Although, Natorp insists, this method will never succeed in revealing representations that are *absolutely* subjective, philosophy and psychology nevertheless aim at absolute subjectivity as an ideal for the reconstructive method.[6]

For our purposes, what is important about this view is that for Natorp the subject is reconstructed within experience, rather than being independent of it. Thus Natorp must reject appeals to the subject to explain anything about experience's character.

Cassirer does not have an account of the subject of knowledge that is as well-developed as Natorp's. However, in *Substance and Function*, he is clear enough that he

6 For a much more detailed interpretation of the theory of subjectivity in Natorp's writings on psychology, see Luft 2011: Chs. 8-9).

rejects any view on which the subject exists independently of experience. His explicit aim is to articulate an account of the subject that overcomes a hypostasized opposition between the subject and object of knowledge. That is, he wants to move decisively beyond the view that the subject and the object always stand in static opposition to one another, with an unbridgeable gap between them. He argues that the philosophical concepts of the subject of knowledge and the object of knowledge get their significance only in relation to the "universal functions of rational and empirical knowledge" (SF 1923 [1910]: 309) -- that is, universal relations between experiences. Thus, he maintains, the subject and object always stand in a dynamic "correlation" to one another: as science establishes functional relations within experience of ever-increasing universality, there will be a parallel evolution of the concepts of the subject and the object that are defined in the context of that system of universal functions.

Admittedly, the details of Cassirer's account are far from clear. But what is clear from his account is that he cannot accept any view of the subject of knowledge on which the subject exists independently of experience and could explain anything about the character of that experience. For on his account, the concept of the subject gets its significance only in relation to a system of universal functions within experience.

So like Mach, neither Natorp nor Cassirer can accept the view that the subject exists independently of experience, and whose existence in space and time explains the character of its experience. Thus all three figures reject the two assumptions made by the simple explanation (considered at the beginning of this section) for why certain experiences represent only limited regions and scales of space and time, and thus why representations of physical laws are intersubjective.

However, if Mach, Natorp, and Cassirer all reject the view that subjects' locations in space and time explain why certain experiences represent only limited regions and scales of space and time, then what view can they have of the relation between those experiences and the subject that has them?

Mach and Natorp at least have views that have one philosophically interesting point in common, even if their views are ultimately very different. In effect, they take the natural view we have just considered and reverse the direction of its philosophical explanation. That is, they do not take the subject as basic and then appeal to it in order to explain why its experience exhibits a point of view. Instead, they take as basic -- as a brute or given fact -- that some experience represents only limited regions or scales of space and time. Then they appeal to that fact about experience in order to give their different accounts of the subject of knowledge.

As we have just seen, for Mach the subject is nothing but a collection of sensation-like elements we label "I." But some of the elements contained in the collection we label "I" will have spatio-temporal character. Mach says "spaces" and "times" are included among those elements, but also elements with color will also have shape and extension, and elements with tone or with tactile qualities will also have duration. Further, Mach's image illustrates the point that, on his view, the elements in the collection we label "I" will be arranged in a spatio-temporal structure that exhibits a point of view. However, crucially for Mach, the elements in the collection labeled "I" do not exhibit the spatio-temporal structure they do *because* they are representations of a subject that exists in space and time independently of experience. Rather, the fact that the elements are arranged in that particular spatio-temporal structure provides a partial explanation for why it is useful for us to group all of these different elements together under the label "I". That is, *because* the elements are contiguous in space and time, capture only limited regions and scales of space and time, and are structured in such a way that it appears as if they flow outward from a single point, we find it useful to group them together in a single collection, and then name that collection "I".

For Natorp, as we have seen, psychology's reconstructive method produces a conception of the subject by revealing representations within experience of ever-decreasing universality. But then, the representations revealed by this method will be

representations of increasingly limited and partial regions or scales of space and time. In other words, the reconstructive method seeks experiences that exhibit points of view. But then, on Natorp's view, it is precisely in virtue of the fact that these representations lack universality -- and so represent only limited regions and scales of space and time -- that they constitute the subject of knowledge. Thus for Natorp, the subject of knowledge is reconstructed precisely from experiences that exhibit points of view. So like Mach, Natorp does not appeal to the subject to explain why its experience has a point of view; rather he appeals to experience that has a point of view, in order to explain our conception of the subject.

6. Points of view in Natorp's and Cassirer's theories of knowledge.

I have argued that Mach's views, and especially his image in the *Analysis of Sensations*, point us to a conception of points of view that we need in order to explain the link that Natorp and Cassirer maintain between physical laws and intersubjectivity. At the same time, no one could deny that Mach has a very different theory of knowledge than Natorp and Cassirer. We thus need to be very careful to identify exactly what views the Marburg School figures share with Mach and what views they do not.

The core of what their views share is this. First, certain sets of experiences represent only limited, partial regions and scales of space and time -- that is, what I have called points of view. Second, those representations of limited regions and scales of space and time will differ from representations of different regions and scales of space and time. Thus, third, representations of physical laws -- that is, relations between experiences that are stable across space and time and so are valid for different regions and scales of space and time -- are precisely the representations that can be shared by different points of view.

However, if those claims are shared by Mach, Natorp, and Cassirer, Mach places them in a very different philosophical context than Natorp and Cassirer do. We have

already briefly noted several important differences between Mach's theory of knowledge and Natorp's and Cassirer's, but there is one more difference we must be clear about.

For Mach, the representations that exhibit the limited spatio-temporal structures that constitute points of view are very close to immediate sensory experience. As we have seen, those representations are the sensation-like elements that, on his empiricism, are the ultimate constituents of experience. His illustration reflects that proximity to immediate sensory experience. The first thing one notices about his image is not the highly abstract point that it exhibits a limited, partial spatio-temporal structure. Rather, the first thing one notices is that the image is an illustration of a person's immediate (or nearly immediate) visual experience. Thus for Mach, what I have called a point of view is a feature paradigmatically of nearly immediate sensory experience.

However, the representations that exhibit points of view, as I have defined them, need not be immediate or nearly immediate sensory experiences. Indeed, for Natorp and Cassirer, they are not.

Natorp and, even more clearly, Cassirer are concerned above all with the objectivity and the intersubjectivity of the theories of mathematical natural science. The principal question of their theories of knowledge is not how an individual knower overcomes the idiosyncrasy and privacy of its immediate sensory experience, in order to have objective, intersubjective knowledge. Rather, as Cassirer makes especially clear in chapters 4-7 of *Substance and Function*, the principal question of his theory of knowledge is how a natural scientific theory can evolve to overcome its relative idiosyncrasy and subjectivity, in order to become relatively more objective and relatively more intersubjective.[7]

---

7 At the same time, Natorp, at least in his writings on psychology, is also interested in sensory experience and the idiosyncrasy or privacy that characterizes it. Thus if that idiosyncrasy is explained by the representations in question exhibiting points of view, then Natorp is committed to the view that immediate (or nearly immediate) sensory experience exhibits points of view. Be that as it may, in his theory of knowledge, he -- like Cassirer -- is not concerned with the individual knower's sensory experience so much as the theories of mathematical natural science.

In the context of this more characteristically Marburg School epistemological concern, the representations that exhibit points of view are not in the first instance immediate sensory experiences. Rather, they are scientific theories at given stages in history. That is, at any point in history before the end of science, the theories of mathematical natural science will be partial, and will be valid for only limited regions and scales of space and time. But to say those theories are valid for only limited regions and scales of space and time is to say that they only represent limited regions and scales of space and time. It is to say they have points of view.

Consider two trite examples: Galileo's time-square law for bodies in freefall and Kepler's laws of planetary motion. At the end of the sixteenth century, Galileo established as an empirical regularity that the distance an object travels in freefall is directly proportional to the square of the time during which it falls. This was an empirical regularity that, to the extent that it was warranted by Galileo's evidence, was valid only within a certain region of space -- namely, near the surface of the earth.

Just after the turn of the century, in 1609 and 1619, Kepler defended his three laws of planetary motion: first, that the orbit of a planet is an ellipse with the sun at one of its foci; second, that a line joining a planet to the sun sweeps out equal areas in equal intervals of time; and third, that the square of a planet's orbital period is directly proportional to the cube of the orbit's semi-major axis (that is, one half of the ellipse's long axis). To the extent that these empirical regularities were warranted by Kepler's evidence, they were valid only for describing planetary motion, and thus at a larger scale than that of terrestrial physics.

Each of these theories exhibits a point of view and the idiosyncrasy that comes with it. Since Galileo's time-square law is valid only near the surface of the earth, it represents only that region of space. Further, from the point of view of that region of

space, Kepler's laws cannot be represented. Likewise, since Kepler's laws of planetary motion are valid only at the scale of astronomical bodies, they represent only that scale. But from the point of view of that scale of space, Galileo's time-square law cannot be represented.

It is not as easy to recognize the epistemic idiosyncrasy that results from different points of view when the representations that exhibit the points of view are natural scientific theories, rather than the (nearly) immediate sensory experience illustrated in Mach's image. But still, these theories do exhibit an epistemic idiosyncrasy in virtue of having points of view. The points of view exhibited by the theories cannot share representations. That is, representations within the spatio-temporal structure of one point of view cannot be identical to representations within the spatio-temporal structure of the other point of view. In exactly that sense, representations exhibiting either point of view fail to be intersubjective.

However, compare these two theories to a theory with laws that are relatively more universal: namely, the three laws of Newton's mechanics and his law of universal gravitation. Newton understood these laws to be absolutely universal. That is, he understood them to describe the motion of bodies in all regions and scales of space and time. Of course, we now understand these laws to be less than absolutely universal: they are not valid for objects traveling at speeds approaching the speed of light or for objects so small as to be on the scale of Planck's constant. Thus on our contemporary understanding, Newton's theory is valid only for limited regions and scales of space and time. Still, we can nevertheless recognize that the laws of Newton's theory are much more universal than Galileo's time-square law or Kepler's laws of planetary motion -- that is, they are valid for more regions and scales of space and time. Thus the point of view exhibited by Newton's theory is much less limited than the ones exhibited by Galileo's and Kepler's theories.

For our purposes, the essential epistemological point is this. The laws of Newton's

mechanics and his law of universal gravitation are universal enough that they are valid for the points of view exhibited by both Galileo's time-square law and Kepler's laws of planetary motion. That is, Newton's laws apply validly to both the region of space and time that Galileo's time-square law applies to and the region of space and time that Kepler's laws apply to. Thus from the point of view exhibited by Galileo's law, it is possible to represent Newton's laws. Similarly, from the point of view exhibited by Kepler's laws, it is possible to represent Newton's laws. Further, the representations of Newton's laws from both points of view will be identical. Consequently, despite the fact that Galileo's law and Kepler's laws exhibit different points of view, those different points of view can nevertheless share representations of Newton's laws. In just that sense, the relative universality of Newton's laws makes them relatively intersubjective.

Thus, as Cassirer suggests repeatedly in chapters 4-7 of *Substance and Function*, the objectivity that science aims at requires that science represent experience in an ever-expanding extent of space and time. To take just one example of Cassirer's expressions of this idea, he says:

> We finally call objective those elements of experience that persist through all change in the here and now, and on which rests the unchangeable character of experience; while we ascribe to the sphere of subjectivity all that belongs to the change itself, and that only expresses a determination of the particular, unique here and now. (SF 1923 [1910]: 273)

What is subjective for Cassirer -- what is particular, and so idiosyncratic -- is what is tied to a limited, partial region or scale of space and time. Cassirer calls this perspective the "here and now." What is objective -- what overcomes the idiosyncrasy and so is intersubjective -- are relations in experience that are constant over regions in space and time beyond the "here and now." Paradigmatically, those relations are laws. So as natural science establishes laws that are constant across ever-increasing extents of space and time, its theories become less and less idiosyncratic. They become more and more intersubjective.

At the same time, on Natorp's and Cassirer's view, natural science will never arrive at a theory that is absolutely intersubjective. For example, we do not understand Newton's mechanics and law of universal gravitation to be absolutely universal. Because, on our understanding, Newton's laws do not apply validly to all scales of space and time, we recognize that they exhibit their own point of view, and representations of them are thus always at least partly subjective. We recognize the possibility that Newton's laws could be, and in fact have been, superseded by theories that are relatively more universal and thus relatively more intersubjective. Likewise, from the perspective of Natorp's and Cassirer's views, we must recognize the possibility for any natural scientific theory that it can be superseded by a theory that is relatively more universal and so too relatively more intersubjective.

It should be clear that the ideas of a point of view and the epistemic idiosyncrasy it brings must function very differently in the context of Natorp's and Cassirer's theories of knowledge than they do in Mach's views. For Natorp and Cassirer, a point of view cannot in the first instance be the region and scale of space and time represented in immediate sensory experience. Rather, it must be the region and scale captured by representations of a natural scientific theory at a given stage in the history of science. That history then turns out to be one characterized by unending progress towards an ideal of theories that are absolutely universal -- that is, theories that are valid for absolutely all regions and scales of space and time -- and so too progress towards an ideal of theories that are absolutely intersubjective.

7. Conclusion.

The crux of the interpretation of Natorp and Cassirer I have defended is the account of the epistemic idiosyncrasy -- of how certain representations fail to be intersubjective -- expressed by the idea of a point of view. On that account, some experiences represent only limited, partial regions and scales of space and time. But then,

representations from the perspectives of those different regions and scales will be different. They will fail to be identical, and so will fail to be intersubjective. At the same time, if physical laws are valid for all regions and scales of space and time, then representations of them will be identical, regardless of what regions and scales of space and time they are represented from. In just that sense, representations of physical laws will be intersubjective.

However, I cannot conclude without emphasizing a final qualification of this account: it cannot be considered anything like a complete interpretation of Natorp's and Cassirer's views of subjectivity. My account is not even a complete interpretation of their views of the epistemic idiosyncrasy that is overcome by objective natural scientific knowledge. A complete interpretation would have to include an account of the connection they see between subjectivity or epistemic idiosyncrasy and the sensory representations studied by psychology and the physiology of the sense organs.

Nevertheless, the account I have offered constitutes one piece of a complete interpretation of Natorp's and Cassirer's views of subjectivity and of how that subjectivity is overcome in theories of mathematical natural science. Moreover, the piece I have offered is especially interesting, since it is a piece that, considered at a sufficient level of abstraction, Natorp and Cassirer share with one of the thinkers they most want to distance themselves from -- Ernst Mach.

That two Marburg School neo-Kantians and a positivist share views about why some representations fail to be intersubjective but why representations of physical laws can be shared suggests that these views are not anomalies in post-Kantian philosophy. On the contrary, it suggests that these views were part of a deeper intellectual current, one that included not just Mach, Natorp, and Cassirer, but also Helmholtz and the other physiological neo-Kantians as well as post-Kantian metaphysicians like Lötze. For these figures, epistemic idiosyncrasy, failures of intersubjectivity, and ultimately subjectivity are connected in some way to locality, to situatedness in space and time. That idea can be

articulated in different ways, and as Mach, Natorp, and Cassirer all show, it can be maintained even by figures who deny that space and time exist independently of the subject's experience of them. But however the view is articulated, it suggests that forms of knowledge that overcome failures of intersubjectivity will be forms of knowledge that extend beyond a particular, local, spatio-temporal situation -- beyond, as Cassirer puts it, "the here and now." Hence the ubiquity in post-Kantian philosophy of the view that representations of physical laws, which aim to be exceptionless in all of space and time, are intersubjective. It is above all this view that, in the same year that Natorp's "On the Objective and Subjective Grounding of Knowledge" appeared, Friedrich Nietzsche parodied as the view that objectivity consists in "an eye turned in no direction at all" -- *seeing* without any perspective of any kind, and so certainly no spatio-temporal perspective (Nietzsche 1997 [1887]: 87).

Thus while the account of Natorp's and Cassirer's views I have offered does not constitute a complete interpretation of their views of subjectivity, it is nevertheless a piece of that view that was deeply embedded in their larger post-Kantian context.

Works cited.

Cassirer, Ernst (1923 [1910]): *Substance and Function*. Williams Curtis Swabey and Marie Collins Swabey (Trans). Chicago: Open Court.

Daston, Lorraine and Peter Galison (2007/2012): *Objectivity.* New York: Zone Books.

Edgar, Scott (2008): "Paul Natorp and the Emergence of Anti-Psychologism in the Nineteenth Century." In: *Studies in History and Philosophy of Science* 39, pp. 54-65.

Hacking, Ian (forthcoming): "Let's Not Talk About Objectivity." In: *Objectivity in Science: Approaches to Historical Epistemology.* Boston Studies in Philosophy and History of Science. Flavia Padovani, Alan Richardson, and Jonathan Y. Tsou (eds.). Dordrecht: Springer.

Heis, Jeremy (2014): "Ernst Cassirer's *Substanzbegriff und Funktionsbegriff*." In: *HOPOS* (4:2), pp. 241-270.

Helmholtz, Hermann von (1977 [1878]): "The Facts in Perception." Malcolm F. Lowe

(trans.). In: *Epistemological Writings*. Robert S. Cohen and Yehuda Elkana (Eds.). Dordrecht: Reidel, pp. 115-163.

Kant, Immanuel (1997 [1781/1787]). *Critique of Pure Reason*. Paul Guyer and Allen Wood (Trans and ed.). Cambridge: Cambridge University Press.

Kant, Immanuel (2002 [1783]). Prolegomena to Any Future Metaphysics that Will be able to Come Forward as Science. Gary Hatfield (Trans.). In: T*heoretical Philosophy after 1781*. Cambridge: Cambridge University Press.

Luft, Sebastian (2011). *Subjectivity and Lifeworld in Transcendental Phenomenology.* Evanstron: Northwestern University Press.

Lotze, Hermann (1884 [1874]): *Logic: in Three Books, of Thought, of Investigations, and of Knowledge*. Bernard Bosanquet (Trans.). London: Oxford University Press.

Mach, Ernst (1897 [1884]). *Contributions to the Analysis of Sensations*. C.M. Williams (Trans.). La Salle: Open Court.

Natorp, Paul (1888): *Einleitung in die Psychologie nach kritische Methode.* Freiburg: J.C.B. Mohr.

Natorp, Paul (1912): *Allgemeine Psychologuie nach kritische Methode.* Freiburg: J.C.B. Mohr.

Natorp, Paul (1981 [1887]): "On the Objective and Subjective Grounding of Knowledge" David Kolb (Trans.) In: J*ournal of the British Society for Phenomenology*" 12:3, pp. 245-266.

Nietzsche, Friedrich (2007 [1887]): *On the Genealogy of Morality.* Carol Deithe (Trans.). Kieth Ansell-Pearson (Ed.). Cambridge: Cambridge University Press.