Carnap's <u>Aufbau</u> and the Legacy of Neutral Monism

by Andy Hamilton

1. The '<u>Aufbau</u>': phenomenalist or neutralist?

It is a hallmark of positivism that it aspired to a neutral standpoint between apparently competing metaphysical or ontological positions. Positivists sought a starting-point for philosophy, and for human knowledge, free of metaphysical or (taking the term in a fairly rich sense) ontological commitment. But they also tended to equate the real with the given in experience; so the positivist attempt to deny metaphysics without being metaphysical, generates a paradox familiar in post-Kantian philosophy. Ernst Mach's <u>The Analysis of Sensations</u>, which comprises what is usually regarded as a phenomenalist construction of the world, represents an early and crude variety of positivist neutralism. However, as argued in the precursor to this article, Mach could not preserve the neutrality of his elements, and his 'neutral monism' collapses into the non-neutral standpoints of either Millian phenomenalism or direct realism.[1] Carnap's construction in <u>Der Logische Aufbau der Welt</u> was, in contrast to that of his predecessor, one of the earliest attempts to separate semantic from ontological questions, and thus achieve an effective neutrality with regard to the latter. Nonetheless, I will argue, the ambiguities of Mach's neutral monist standpoint continued to manifest themselves in the <u>Aufbau</u>, and the rationale for this later attempt at ontological neutrality remains in many ways bafflingly obscure.

My question, therefore, is 'Did Carnap in the <u>Aufbau</u> maintain a neutrality between phenomenalism, physicalism and other "metaphysical" theses, as he claimed, or was he really a phenomenalist <u>au fond</u>?' What I will term the <u>Aufbau</u>'s 'official programme', as stated for instance in Carnap's 'Intellectual Autobiography', argued that the choice between a phenomenalist construction of the Machian sort and a physicalist construction is a purely pragmatic one:

> For me it was simply a methodological question of choosing the most suitable basis for the system to be constructed, either a phenomenalistic or a physicalistic basis. The ontological theses of...phenomenalism or materialism remained for me entirely out of consideration....[I claimed that] if one proceeds from the discussion of language forms to that of the corresponding metaphysical theses about the reality or unreality of some kind of entities, he steps beyond the bounds of science.[2]

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[1]A. Hamilton, 'Ernst Mach and the Elimination of Subjectivity' (<u>Ratio</u>, Vol III no. 2, Dec. 1990). The doctrine of neutral monism is elaborated there and below, section 4. Mach's volume is <u>The Analysis of Sensations</u> (New York: Dover, 1959).

[2]P. Schilpp ed., <u>The Philosophy of Rudolf Carnap</u> (Library of the Living Philosophers, 1963), pp. 18-19. Carnap barely mentions 'phenomenalism' in the Aufbau itself; when he does, he defines it very differently as the doctrine committed to the reality of "things-in-themselves", whose appearances are the physical objects (op. cit. note 15, p. 280). Schlick used the term in the <u>General Theory of Knowledge</u> to refer to the Kantian

However, the Aufbau was long regarded principally as a phenomenalist tract. Scepticism about the allegedly 'methodological' nature of the Carnapian brands of phenomenalism or solipsism was soon voiced by Neurath, the robust physicalist. 'Methodological solipsism' or 'methodological positivism', he commented drily, 'do not become more serviceable because of the addition of the word "methodological"'.[3] Quine followed Neurath's interpretation, treating the Aufbau as a paradigm of 'radical reductionism', one of the two interdependent dogmas of empiricism. His reservations about this interpretation resulted from the way Carnap's treatment of physical objects fell short of reduction not just through sketchiness but in principle.[4] The more important grounds for reservation - Carnap's commitment to ontological neutrality and the merely pragmatic choice between phenomenalist and physicalist constructions - went unmentioned. Hempel, in his article 'Rudolf Carnap, Logical Empiricist', does acknowledge these neutralist pretensions, but this does not lead him to doubt the empiricist allegiance of the Aufbau, and indeed of its author's entire career.[5]

Recently, however, Michael Friedman has argued powerfully against the traditional concentration on the Aufbau's programme of phenomenalist reduction, drawing attention to what he regards as a neglected neo-Kantian agenda in the history of logical positivism.[6] The strong disinclination to trust Carnap's

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doctrine that "all we know are phenomena", as opposed to things-in-themselves (M. Schlick, General Theory of Knowledge (La Salle, Illinois: Open Court, 1974)).

[3]O. Neurath, 'Protocol Sentences' (1932-33), in Logical Positivism, A. Ayer ed., (New York: Free Press, 1959), p. 206.

[4]Carnap does not indicate how 'Quality q is at point-instant x;y;z;t' could be translated into the initial sense-datum language. Quine treated Carnap's later Logical Syntax of Language in a similar reductionist fashion; see R. Creath ed. Dear Carnap, Dear Van: The Quine-Carnap Correspondence and Related Work, (Berkeley: University of California Press, 1990), p. 30.

[5]Neither, understandably, do other contributors to Rudolf Carnap, Logical Empiricist, ed. J. Hintikka, otherwise they would presumably not have been allowed to contribute (Dordrecht: Reidel, 1975).

[6]M. Friedman, 'Carnap's Aufbau Reconsidered', Nous 21 (1987); see also his 'Critical Notice: Moritz Schlick, Philosophical Papers', Philosophy of Science 50 (1983), Foundation of Space-Time Theories: Relativistic Physics and Philosophy of Science (Princeton University Press, 1983), 'The Re-evaluation of Logical Positivism', The Journal of Philosophy, 88 (1991), and 'Carnap and A Priori Truth' in the present volume. Friedman's work offers the most challenging re-evaluation of the historical role of logical positivism;

pretensions to ontological neutrality, Friedman argues, stems from the view that the positivists'
anti-metaphysical attitude must rest on verificationism and radical empiricism. On this view, the
positivists needed to complement their anti-metaphysical stance with a phenomenalist construction in
order to show how non-metaphysical statements of science and everyday life gained their meaning
ultimately through confrontation with sense-experience. The upshot of this story is, as Friedman puts it,
that Carnap's attempt to distance himself from traditional phenomenalism must be seen as a sham. This
was clearly Neurath's view.

Friedman bases his re-interpretation firstly on the grounds that much of the actual logical construction in
the Aufbau takes place within the domain of private sense experience, puzzling if Carnap's primary
concern was with the reduction of the physical to the phenomenal.[7] More fundamentally, Friedman
argues that the neutral character of construction theory has been glossed over; the 'official programme'
should be taken seriously.   This reassessment of the Aufbau is part of Friedman's attempt to show how
logical positivism did not develop along a direct empiricist lineage from Hume and Mach via Russell and
the Tractatus, but depended equally on the evolution of German neo-Kantianism via Hilbert and
Einstein.[8]

According to Friedman, therefore, the choice of a phenomenalist construction for the Aufbau was 'not in
any way a philosophical necessity...stemming from antecedent commitment to phenomenalism as a
philosophical doctrine'.[9] I will argue that this claim is incorrect, and that as a reaction to the traditional
picture, Friedman's account is too extreme. The Aufbau is a work of transition, and much of its puzzling
nature arises from the fact that it is both the final expression of empirio-critical positivism in Carnap's

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recently he seems to have moved from the claim that the work of
the so-called logical positivists is in many respects
neo-Kantian, to the claim that it occupies a novel intermediate
position between traditional Kantianism and traditional
empiricism. While the present article was being completed,
Alberto Coffa's remarkable work The Semantic Tradition from Kant
to Carnap (Cambridge University Press, 1991) appeared. In Ch.
12, Coffa pursues with great subtlety his claim that the
neutralism of the Aufbau ends in idealism; that, as Reichenbach
wrote to Carnap, 'your neutrality [between idealism and realism]
is a pretty dream' (ibid. p. 223). My claim is that that
neutralism, whether in the end idealist or not, is in any case
not fully implemented.

[7]'Carnap's Aufbau Reconsidered', op. cit. note 6, p. 522.

[8]'Critical Notice: Moritz Schlick' op. cit. note 6, p. 499;
Foundations of Space-Time Theories op. cit. note 6, Ch. 1. In
his later article 'The Re-evaluation of Logical Positivism', he
argues that 'logical positivism has...broken decisively with the
traditional empiricism of Locke, Berkeley, Hume and Mach', in
emphasising the constitutive role of a priori principles which
are nonetheless not synthetic (op. cit. note 6, p. 514).

[9]'Carnap's Aufbau Reconsidered', op. cit. note 6, p. 524.

output, and the beginnings of the linguistic relativism famously expressed in his Principle of Tolerance. The question of how far Carnapian 'methodological' phenomenalism marks a break with the past is further complicated by fact that its Machian precursor exhibited very similar neutralist pretensions.

2. The 'official programme' of the <u>Aufbau</u>

The <u>Aufbau</u> programme at least <u>includes</u> a traditional phenomenalist rationale. In the 1961 Preface to the 2nd edition, Carnap wrote:

> The main problem [of the <u>Aufbau</u>] concerns the possibility of the rational reconstruction of the concepts of all fields of knowledge on the basis of concepts that refer to the immediately given (p. v).[10]

In the text itself, he claimed that in its method, 'The present study is an attempt <u>to apply the theory of relations to the task of analyzing reality</u>' (p. 7). The positivist project, attempted by Avenarius, Mach, Poincare and Ziehen, may now actually be performed, at least in outline, using the new logic of Russell and Whitehead. Hence the quotation of Russell's dictum for a scientific philosophy: 'Wherever possible, logical constructions are to be substituted for inferred entities' (p. 7). The logic and the anti-metaphysical ideology of the <u>Tractatus</u> greatly influenced Carnap; but only Wittgenstein's defence of extensionality, which as will be noted had an important influence on the work's method, is apparent at the time of the <u>Aufbau</u>.

Positivism and the new logic are the first two ingredients of the <u>Aufbau</u> programme; but taken together, they would merely generate a more sophisticated Machian neutral monism. It is conventionalism, appearing in Carnap's early work <u>Der Raum</u> (1922),[11] which is the crucial third ingredient defining the 'official programme' of the <u>Aufbau</u>; as I will argue, it bears an uneasy relationship with positivism. The conventionalist ingredient came neither from Russell nor from the <u>Tractatus</u>, but from the work of Poincare and Hilbert.[12]

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[10]All subsequent unqualified references are to R. George's translation, <u>The Logical Structure Of The World</u>, in an edition which also includes <u>Pseudoproblems in Philosophy</u> (Berkeley and Los Angeles: University of California Press, 1967).

[11]<u>Space: A Contribution to the Theory of Science</u>, translation by M. Friedman and P. Heath forthcoming.

[12] See Friedman, 'Critical Notice: Moritz Schlick', p. 506n, and <u>Foundations of Space-Time Theories</u> p. 7, both <u>op. cit.</u> note 6; also G. Baker, <u>Wittgenstein, Frege and the Vienna Circle</u> (Oxford: Blackwell, 1988). This conventionalism may be 'Kantian'; Coffa (<u>op. cit.</u> note 6), however, locates the Kantian influence in an implicit idealist bias. My main concern is with Carnap's phenomenalism and ontological neutrality, and I leave aside the broader question of the 'Kantian influence'.

It is conventionalism (together with an apparent lack of concern with scepticism and traditional epistemology) which distinguishes the Aufbau programme from that of Russell's Our Knowledge of the External World (1914); which programme, however, Carnap saw himself as completing.[13] In apparent contrast to earlier phenomenalist constructions, that of the Aufbau is intended to be one choice among several possible alternatives, each of which is unconstrained by, and implies no, 'metaphysical' commitment. The phenomenalist construction has the advantage that it reflects the 'epistemic order' in which we come to know objects (pp. 88-89, 94 and 108); but its adoption does not imply a 'sensationalist or positivist' position (p. 96). Known objects in their 'epistemic order' are: one's own psychological states or experiences, physical objects, 3rd-person psychological states, and socio-cultural objects. The second kind of object 'is recognised through the mediation of the first' and so on (p. 89). The fact that this is the epistemic order can be expressed in any system, but is mirrored only in the phenomenalistic system, Carnap maintains.

It is simply his interest in reflecting the 'epistemic order' that, Carnap says, made him choose a phenomenalist rather than physicalist construction. It is this interest which means that the Aufbau offers a construction system 'for epistemology'. Construction theory, he claims, agrees with 'scientific materialism' that 'all psychological (and other) objects are reducible to physical objects'. But

> Construction theory and, more generally, (rational) science neither maintain nor deny the additional claim of metaphysical materialism that all psychological processes are essentially physical, and that nothing but the physical exists (p. 95).

'[Physicalist] realism', 'subjective idealism' (Millian phenomenalism) and other metaphysical doctrines conflict with each other at the metaphysical level, but since each is consistent with construction theory at an epistemological level, the choice of a phenomenalist basis is according to Carnap's manifesto merely pragmatic. He talks of a 'methodological justification and fruitfulness...the difference [between systems] lies merely in the way in which the problems are posed and the concepts constructed'(pp. 95-6).[14] Construction theory takes a core of truths from both materialism and phenomenalism; viz., the reducibility of the psychological to the physical, and the reducibility of the physical to the psychological. But not merely is the choice of construction unconstrained by the conflicting metaphysical conclusions customarily drawn from each of the alleged possibilities of these different reductions; furthermore, 'in general, [science] needs both an experiential and a materialistic derivation of all concepts', it needs 'both directions of logical reducibility' (p. 96).

The phenomenalist and physicalist constructions are evidently intended to be 'equivalent systems':[15]

> Once realistic and constructional languages are recognized as nothing but two different

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[13]See R. Creath op. cit. note 4, p. 24; A. Coffa op. cit. note 6, p. 208. The fact that Carnap saw himself as completing Russell's programme is one reason for claiming a foundationalist strand in the Aufbau; see section 5 below.

[14]The conventionalist denouement was posed more starkly later, for instance in the well-known example of the geographers in Pseudoproblems, p. 333.

[15]See Friedman Foundation of Space-Time Theories op. cit. note 6, Ch. 1.

languages which express the same state of affairs, several, perhaps even most, epistemological disputes become pointless (p. 87).

It is important to realise that Carnap assumes only <u>psycho-physical parallelism</u> in his phenomenalist 'reduction'. He does not argue for the kind of meaning equivalence between statements about the given and physical object statements which reductionist programmes normally require. He does, however, assert that 'the realistic and the constructional languages have actually the same meaning', in the sense in which he believes behavioural ascriptions have the same meaning as mental ones, viz. that no difference in meaning can be given in 'scientific expressions', that they are extensionally equivalent (p. 86). One must therefore treat with caution Carnap's talk of 'translatability' and 'reducibility'. The truth of the merely nomically necessary biconditionals of the <u>Aufbau</u> 'reduction' is consistent with the existence of things-in-themselves of which phenomena are effects. Whether such entities exist is of course a 'question of essence' and so Carnap has other reasons for ignoring it; by the time of <u>Pseudoproblems</u> he would regard it as 'meaningless'. The issue of the <u>Aufbau</u>'s 'extensional method' is a notorious one, discussed (inadequately I fear) below.

There is one final aspect of Carnap's programme that must be mentioned. This is his characterisation of 'methodological' phenomenalism as <u>structural</u> and not <u>material</u>; surely not unconnected with his claim that the choice of a phenomenalist construction is merely pragmatic. The overarching aim of Carnap's constructional programme is to guarantee scientific unity and hence objectivity:

> ...the fundamental thesis of construction theory...[is that] there is only one object domain and that each scientific statement is about the objects in this domain...each scientific statement can in principle be so transformed that it is nothing but a structure statement...[This] transformation is...imperative. For science wants to speak about what is objective, and whatever does not belong to structure but to the material (i.e. anything that can be pointed out in concrete ostensive definition) is, in the final analysis, subjective.[16]

The 'unity of the object domain' means that the scientific enterprise is not fragmented into unrelated 'special sciences', and requires the construction of a unified system of purely structural definite descriptions. This construction, Carnap argues, permits the subjective origin of knowledge to be transcended; individual experiences are drained of material content and the intersubjective structure preserved. Carnap's phenomenalism is therefore an unusual and attenuated variety; it is phenomenal <u>relations</u>, not phenomenal elements or classes of such elements, that Carnap places at the start of his construction. His claim is that certain structural properties will be the same in the different streams of experience of different subjects.

This development of traditional phenomenalism is crucial, though crucially obscure. It obviously shows that Carnap was aware of the subjectivist tendencies of phenomenalism; but so too was Mach. Friedman contends that this concern with structure, and the notion of objectivity which it encourages, is central to Carnap's neo-Kantian agenda; and it is true that the structure/content distinction subsequently played a central role in logical positivist thought.[17] However, I am not convinced that Carnap did, by this means,

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[16]p. 29. These claims are reinforced by the way in which Carnap requires that 'basic relations' take precedence over 'basic elements', pp. 98-99.

[17]He defends this contention at length in 'Carnap's <u>Aufbau</u> Reconsidered', <u>op. cit.</u> note 6. See also E. Runggaldier, <u>Carnap's Early Conventionalism</u> (Amsterdam: Editions Rodopi B.V., 1984), p. 71.

achieve a thoroughgoing conventionalist reorientation of Mach's phenomenalism. There is as much a continuity as a sharp break in concerns, as I will now argue.

3. The Machian residue (1): Methodological solipsism

By presenting a programme of 'methodological' phenomenalism, Carnap believed he had resolved the dilemma of fin de siecle critical positivism. Mach had recognised that in equating the real with the given, his 'neutral monism' might collapse into subjectivism. To avoid this outcome, in The Analysis of Sensations he tried unsuccessfully to deny the subject/object dichotomy.[18] In contrast, Carnap's phenomenalist construction takes as its basis 'my' experiences, so to that extent is avowedly 'solipsistic' in a way that Mach did not envisage. But Carnap's use of the paradoxical description 'methodological solipsism' is meant to distinguish the Aufbau programme from the unhappy efforts of earlier positivists. The choice is 'solipsistic', Carnap claims, in that the basic elements are in fact my experiences; the construction has an 'autopsychological' and not a 'general psychological' basis.   But the programme is 'merely an application of the form and method of solipsism...not...an acknowledgment of its central thesis', which is that 'only one subject and its experiences are real, while the other subjects are nonreal' (pp. 102 and 101). Carnap suggests several reasons why the 'methodological' epithet is appropriate:

(i) 'At the beginning of the system, the experiences must simply be taken as they occur.   We shall not claim [their] reality or nonreality...; rather, these claims will be "bracketed"...in Husserl's sense'. The differentiation between real and nonreal objects occurs at a late stage in the construction (p. 101).

(ii) 'To say that an experience is egocentric does not make sense until we speak of the experiences of others which are constructed from "my" experiences' (p. 105).

(iii) The given is subjectless, contrary to the thesis of traditional solipsism: 'Egocentricity is not a basic property of the basic elements' (p. 104).[19]

(iv) The choice of an autopsychological basis is pragmatic, justified simply through our concern that the construction reflects the 'epistemic order'.

But Carnap's account of what is new in his 'methodological' solipsism is strangely inaccurate, and involves a curious analysis of his differences with positivist predecessors, while marshalling now-obscure names in support of methodological solipsism.[20]   He says he disagrees with the 'not purely

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[18]See my op. cit. note 1.

[19]At the end of the Aufbau, in the 'Clarification of Philosophical Problems', Carnap echoes Lichtenberg and Hume on introspection: 'The existence of the self is not an originally given fact'(p. 261).   The self is a 'quasi-object'; but it is still a unit, since 'a class is not a collection, or the sum, or a bundle of its elements, but a unified expression for that which the elements have in common' (p. 260).

[20]One   of   whom,   Schubert-Soldern,   used   the   term

autopsychological' starting point of Avenarius and others and the 'antisolipsistic' position of Mach, and claims that the latter explicitly opposes 'methodological' solipsism (pp. 102-3). This is odd, because Mach would unhesitatingly have <u>agreed</u> with claims (i)-(iii) above. He even tentatively endorses (iv); if he had fully subscribed to such a view, of course, he would have been as much a Thoroughly Modern Positivist as Carnap aspired to be. In most respects, then, Mach (and likewise presumably Avenarius) is anti-solipsistic in precisely the sense in which Carnap is; that is, in rejecting traditional solipsism and advocating 'methodological' solipsism.[21]

If we look closer at thesis (iii) - held in common by Mach and Carnap - the earlier positivist sub-text to the <u>Aufbau</u> is revealed, since the thesis is determined by a positivist and by a conventionalist rationale, and therefore over-determined.[22] What one would expect from the later Carnap is a tripartite analysis of 'The given is subjectless'. In one sense the assertion would be an attempt to answer a 'question of essence', in fact unanswerable by science and, in the terms of <u>Pseudoproblems</u>, meaningless. When he later discusses constructional 'quasi-objects' (e.g. the self) Carnap does say:

> ...the question whether, at the bottom of all autopsychological objects, there lies the 'self' as a final unresolvable unity, is...a question of essence; thus, to pose and answer this question is not the task of the constructional system, but of metaphysics (p. 205).

In the sections under discussion (64-66), however, this analysis is not mentioned.

In a second sense, 'The given is subjectless' is an answer to a different kind of 'external' question, an (allegedly) empirical one about the content of 'subjective experience'. Finally, it is an 'internal' constructional 'truth', which merely expresses a decision about, or perhaps a necessary feature of, that system. These last two senses seem to be conflated by Carnap in section 65, when, moving on from the apparently constructional truth that 'the basis is neutral in any system form' (neither psychological nor physical and, by implication, not belonging to a particular subject either), he adduces psychological evidence for the subjectlessness of the given (pp. 104-5).

This conflation reflects an unclarity in the constructionist project, one echoed in the <u>Aufbau</u>'s most notable (and possibly sole) successor, Nelson Goodman's <u>The Structure of Appearance</u>. The tendency of both writers is to treat the phenomenalistic construction simply as a neutral monist construction incorporated wholesale (with its motivation) into the new conventionalist enterprise. The continuing concern with the subjectlessness of the given is part of this tendency. Here is Goodman's view:

> ...speaking from outside a phenomenalistic system, one may describe its basis as solipsistic, may say that its basic units are comprised within a single stream of experience. But speaking from the point of view of the system itself, this is an anachronism. For the basic units...are <u>neutral</u> material. A presentation, for example, may be at once part of a stream of phenomena and part of a physical object; but this will depend on the later constructions of the system.[23]

'methodological solipsism' in the 1880's or 90's - in his 'Uber die Bedeutung des erkenntnistheoretischen Solipsismus', mentioned pp. 102, 354.

[21]See my <u>op. cit.</u> note 1, pp. 134, 124-6.

[22]An objection perhaps anticipated by Runggaldier, <u>op. cit.</u> note 17, pp. 69-70.

[23]N. Goodman, <u>The Structure of Appearance</u>, p. 107. The

One wants to ask here, are the basic units 'neutral material' because of (i) the constructional truth that, prior to their ordering in a system, it makes no sense to call them mental or physical, mine or yours; or because of (ii) the empirical truth that what is given in experience is in fact subjectless? Neutral monists certainly seemed to think they needed both (i) and (ii) in order to avoid subjectivism. Whether in fact they needed the latter, empirical, truth is not clear; but Carnap certainly doesn't need it, and furthermore doesn't seem to need the constructional truth either. With the advent of conventionalism, he ought to be saying that since we choose what to take as elements, there is no need to describe them as neutral in order to avoid a metaphysical commitment to subjective idealism. Carnap's continuing concern with the neutrality of the given is a product of engrained positivist habits of thought.

It is evident that he is worried about subjectivism when he writes:

> The basis could...be described as the given, but we must realise that this does not presuppose somebody or something to whom the given is given. The expression 'the given' has the advantage of a certain neutrality over...'the autopsychological' and 'stream of experience' (p. 102).[24]

Later he writes that 'If the basis of the constructional system is autopsychological, then the danger of subjectivism seems to arise' (p. 106); but he is confident that the danger is avoided because the psychological construction involves structural and not material properties of the individual stream of experience. However, the reason why there is no danger of subjectivism ought to be that the choice of an autopsychological system is purely pragmatic, and so implies no ontological commitment to experiences as the ultimate constituents of the world. The fact that Carnap does not say this directly indicates an unclarity in his own mind about his manifesto commitment, even if his defence of his phenomenalism as 'structural' goes some way towards saying it. Mach, for instance, could adopt the latter justification without being committed to a conventional choice between different constructional systems.

Insofar as he is an empiricist, Carnap will take the content of the given very seriously. It is not a 'mere' empirical fact, if it is a fact, that there is no self given in experience. But pre-conventionalism, there was always a substantial philosophical reason for this concern; either Mach's need to avoid subjectivism, or the way earlier empiricists used the non-introspectibility of the self to counter Cartesianism.[25] Since what is selected as the constructional base no longer has an ontologically privileged role, Carnap's continued emphasis on neutrality is redundant.

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final sentence is particularly 'neutral monist' in tone.

[24]Carnap does not see the amusing side to this claim; Joachim Schulte reported in discussion that he did not either. Were there Christmas presents in the Carnap household that were given, without presupposing a recipient? Carnap's 'gegeben', translates as 'the given', not as 'the data' - though the latter also literally means 'something that is given'.

[25]In Hume's case it was supplemented by the claim that the idea of an enduring self is unintelligible. Lichtenberg claimed that we can have no certain knowledge of a Cartesian ego, rather than that it cannot be introspected.

The ambiguities of Carnap's position were reflected in his colleagues' confusions about it, and tensions in their own work. Stung by C.I. Lewis' characterisation of the Viennese philosophy as solipsistic, Schlick criticised Carnap's use of the term 'methodological solipsism' for giving a misleading impression of 'true positivism'. He remarked correctly that

> 'Methodological solipsism' is not a kind of solipsism, but a method of building up concepts. And it must be borne in mind that the order of construction which Carnap recommends - beginning with 'for-me' entities - is not asserted to be the only possible one.

He continued however:

> It would have been better to have chosen a different order, but in principle Carnap was well aware of the fact that original experience is 'without a subject'.[26]

Schlick implies that Carnap could have chosen a subjectless starting point, instead of the 'solipsistic' one he did in fact choose; my preceding arguments ought to show how confused Schlick's analysis is.

4. The Machian residue (2): neutral monism

A positivist residue is apparent also when Carnap moves on to explain the philosophical applications of construction theory. He at first sight endorses Machian neutral monism, when he asks us to imagine a night sky containing stars of <u>constant</u> brilliance and colour:

> ...all objects of the empirical sciences (except for the elementary experiences themselves, which correspond to the stars) are constellations of stars, together with their relations and connections, which are formed from propertyless, but orderable stars. The differences between the so-called object types, especially the difference between the physical and the psychological, merely indicate different types of constellation...which are due to different modes of organisation.

Applying this analogy

> ...we see that the physical and the psychological must not be envisaged as two principles or aspects of the world. They are order forms of the one, unified domain of elements which are propertyless and merely connected through relations (p. 259).

'As a thesis concerning the fundamental constitution of the world', therefore, dualism 'certainly is not tenable but has to give way to a pluralism which recognizes <u>in the world</u> an unlimited number of possible forms of ordering the elements...' (my underlining). But the result remains the same: 'in the world of <u>cognizable</u> objects, there are indeed (as in any domain, if it can be ordered at all) an unlimited number of order forms, but only one uniform type of element which is to be ordered' (again, my underlining). Carnap adds that his position agrees with Russell's in <u>The Analysis of Mind</u>, and that Mach's formulation 'that there are different directions of investigation relative to the same matter is...related to the given

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[26]'Meaning and Verification', in M. Schlick, <u>Philosophical Papers Vol. II</u> (Dordrecht: Reidel, 1979), p. 472; C.I. Lewis' article is 'Experience and Meaning', <u>Philosophical Review</u> Vol. XLIII No. 2, 1934.

position' (p. 260). These positions are, however, neutral monist.

In apparent contrast to these claims, the official programme maintained that the psychological and physical constructions are 'equivalent systems' without any common elementary basis. The physical basis is meant to be embedded in the psychological system at a non-basic level, and vice versa (though Carnap does not make this explicit). <u>Contra</u> the neutral monists, there is meant to be no <u>unique</u> set of atoms, uniform for all constructional systems; what is atomic in one system is non-atomic, a product of derivation, in another. Mach's view is that we interpret an antecendently-existing set of neutral elements in whatever way is thought-economical (physically in some cases, psychologically in others); Carnap's official view is that what we take to be elements is relative to the constructional system we are using. Neutrality therefore consists not in the presence of a single set of elements, uniform for all systems, but precisely in the <u>absence</u> of such uniformity. In this way Carnap hopes to avoid the residual metaphysical or ontological commitment of his neutral monist precursors.

One might argue that the 'stars' passages are consistent with the official programme because the 'one, unified domain of elements' is to be taken as relative to the particular constructional system that is chosen; i.e. that Carnap's monistic claim is <u>internal</u> to a particular construction, and thus allows that there could be different elements in other constructions.[27] The reference to 'the world of cognizable objects' indicates that only the psychological constructional system is being considered. And since objectivity is purely structural, the elements are not <u>objects</u> at all - the basis is not neutral <u>atoms</u>. The stars in the analogy are propertyless; close to bare particulars (and to the doctrine of the 'ineffability of content').

There are several things to be said about this defence. First, the thesis that it is <u>relations</u> between propertyless elements that gives them content is not novel; in cruder form it constitutes the neutral monist claim that the mental and physical are merely <u>constructions</u> from propertyless elements. Second, Carnap's comments aligning himself with Russell's and Mach's neutral monism remain to be explained. Finally, even accepting the defence, it is still the case that both Carnap and Goodman tend to treat the phenomenalistic system as a neutral monist construction incorporated wholesale (with its motivation) into the new conventionalist enterprise. But as I have argued in respect of the 'subjectlessness of the given', this ought not to happen.[28]

One would expect Carnap, in the passages in question, to assert that the question of whether the world is

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[27]Michael Friedman argued this in conversation; recall the different internal and external senses of 'The given is subjectless', above.

[28]Coffa notes that 'nothing is easier than to produce a long list of quotations from the <u>Aufbau</u> that, if literally taken, could be asserted only by someone committed to the doctrine that all there is, is reified experience' (<u>op. cit.</u> note 6, p. 227). He quotes from an unpublished 1929 Lecture 'Von Gott und Seele': 'Quite generally, everything that we talk about must be reducible to what I have experienced'. But Coffa perhaps fails to do full justice to the official programme of the <u>Aufbau</u>, which does allow such reducibility provided a physicalist reduction is also acknowledged. I have tried to argue that, even if one tries <u>not</u> to take them literally, such quotations show a persisting phenomenalist bias.

fundamentally constituted by two (mental and physical) substances is pseudo-problematic, since one can construct it on either a physical or a psychological basis. Perhaps he is justified in drawing residual sense from the metaphysical debate when he says that insofar as a unique basis is required, monism is correct. But it is surprising, in view of the official programme, that Carnap fails to advocate in explicit terms a conventionalist dissolution. In other connections, he is happy to use the language of conventionalism; he says that 'logic (including mathematics) consists solely of conventions [Festsetzungen] concerning the use of symbols' (p. 178), and claims that there are 'no other components in cognition than...the conventional and the empirical; thus, there is no synthetic a priori' (p. 289). The absence of such talk when choice in construction theory is under consideration is notable, and indeed the subdued role of conventionalism in the Aufbau, as compared with Der Raum, is noted by Friedman in the present volume. What one is looking for is the application to construction theory of Poincare's concluding comments in Ch. III of Science and Hypothesis: 'What, then, are we to think of the question: Is Euclidean geometry true? It has no meaning...One geometry cannot be more true than another, it can only be more convenient'. On the official programme, Carnap ought to treat competing constructional systems in just the way that Poincare treats competing geometrical systems; this he does not do explicitly.

The arguments of the present and preceding sections have portrayed the Aufbau as a work which is at the end of something; positivist neutral monism or phenomenalism. But it is near the beginning of something also; the conventionalist Principle of Tolerance, and the idea that one's ontology is simply a product of the 'language-form' one chooses to use.[29] When Carnap changed his allegiance from 'methodological phenomenalism' to 'methodological physicalism', the ideal of ontological neutrality was freed from its neutral monist associations; though Carnap had an enduring and problematic affinity with empiricism. This change of allegiance, and the light it sheds on the question of the allegedly pragmatic choice between systems, is the topic of my final section.

5. Conventionalism and foundationalism: From methodological phenomenalism to methodological physicalism

To say that the adoption of a certain attitude or policy is simply a matter of convention, or 'merely pragmatic', or (in Carnap's words) 'simply a methodological question', is to say at least two things. First, that it is genuinely a choice, and not forced either rationally, because there is a question of the truth or falsity of the alternative positions, or psychologically, by some strong natural disposition. But also, that it is guided by considerations e.g. of simplicity or convenience, that it is not arbitrary.[30] The first condition probably means that Mach's anti-factualism about the construction of complexes is non-conventionalist (although in his case, appropriately, the question whether it is may be underdetermined by the data). This is because his biologism implies a strong and innate disposition to certain kinds of construction.[31] Ethical naturalism, which rejects moral facts in favour of psychologically

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[29]Cf. Coffa: 'If constitution would soon vanish from the forefront of Carnap's concerns, the neutral language would become an ever more dominant goal' (op. cit. note 6, p. 235).

[30]These points are expressed well, in connection with Poincare's conventionalism, by N. Griffin, Russell's Idealist Apprenticeship (Oxford: Clarendon Press, 1991) pp. 176-81.

[31]Without biologism, Mach's constructionism would indeed conform better than that of Carnap to Friedman's account of

compelling norms, is another example of a non-conventionalist anti-factualism.

Of course, the kind of guidance depends on the choice in question. The considerations guiding a choice of geometry are more substantial than those guiding a choice of metric. (In many cases - e.g. the latter - the decisions of other practitioners is itself a consideration; but that aspect of conventionalism is not relevant here.) Carnap's later 'tolerant' avowal that competition between metaphysical positions 'is just a matter of the different language-forms' implies a laissez-faire attitude that does tend to 'arbitrarism'. (Coffa describes him as 'a revolutionary urging us to let a thousand flowers bloom'.) This attitude contrasts with Nelson Goodman's 'fastidiousness' in the choice of systems[32]; but even on Goodman's view there must be a distinction between guidance and constraint. In Carnap's choice of constructional system in the Aufbau, a commitment to foundational epistemology may be said to constrain the decision; or so I will try to show.

During the 1930's, Carnap abandoned 'methodological phenomenalism' in favour of what I will call, with fairly obvious justification, 'methodological physicalism', first presented in several articles in Erkenntnis (1931-4).[33] The reasons for this change have an important bearing on the question of whether the choice of system is a mere matter of convention. Later commentators, including Carnap himself, present the switch to methodological physicalism as a major philosophical re-orientation, which suggests that in the Aufbau there was indeed, pace Friedman, an 'antecedent commitment to phenomenalism' and, connectedly, to a foundationalist rationale for the phenomenalist construction. This switch seemed, paradoxically, to involve a role-reversal on the part of the two leading members of the Vienna Circle. In the 1930's, Schlick, who in his earlier work had been a 'critical realist' opponent of traditional positivism, came to advocate the 'principle of verification', and vigorously affirmed, against the objections of Neurath, the existence of a foundational class of Konstatierungen or quasi-judgments of immediate experience. But it was these same coherentist objections of Neurath which apparently persuaded Carnap to abandon his own allegiance to phenomenalistic foundationalism.

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conventionalism in terms of 'equivalent systems'; 'seemingly incompatible theoretical descriptions...declared to be equivalent when they agree on all observations' (Foundation of Space-Time Theories, op. cit. note 6, p. 6).

[32]Coffa quotation: op. cit. note 6, p. 326. Carnap does deny that he finds the differences between philosophical schools unimportant. 'On the contrary, it seemed to me one the most important tasks of philosophers to investigate the various possible langauge forms and discover their characteristic properties...' (P. Schilpp ed. op. cit. note 2, p. 44). Goodman criticised Carnap's apparent tolerance, and urged philosophers to be 'utterly fastidious in choosing linguistic forms', in The Problem of Universals (1956), reprinted in Contemporary Readings in Logical Theory ed. I. Copi and J. Gould, (New York: Macmillan, 1967), p. 215.

[33]In Max Black's translation The Unity of Science, Carnap uses the term 'methodical materialism'. (The Unity of Science (London: Kegan Paul, 1934), p. 93; translation of 'Die physikalische Sprache als Universalsprache der Wissenschaft', Erkenntnis, II (1931-2), pp. 432-65.)

This at least is Hempel's account, according to which Carnap saw the defects in his 'phenomenalist construal' of the 'experiential basis of empirical knowledge' when Neurath and Popper pressed their arguments.[34] Carnap had, he says, been attracted by the 'apparent promise of providing empirical science with a secure bed-rock foundation consisting of phenomenalistic sentences established by immediate experience, and thus indubitably true'. Hempel's analysis is supported by Carnap's own comments in the 'Autobiography': 'I regarded a phenomenalistic language as the best for a philosophical analysis of knowledge. I believed that the task of philosophy consists in reducing all knowledge to a basis of certainty. Since the most certain knowledge is that of the immediately given...it seemed that the philosopher must employ a language which uses sense-data as a basis'. After his change of allegiance, Hempel continues, Carnap replaced the phenomenalistic language with the 'thing language' of a behaviouristic physicalism which tended to eliminative materialism.[35]

These comments of Carnap and Hempel suggest that the original choice of system was constrained rather than merely guided - by a commitment to foundationalism. Hempel's account, by one closely associated with the Vienna Circle, could merely express the traditional interpretation; his final comment that Carnap's views tend to eliminative materialism fails to acknowledge their neutralist pretensions. But Carnap's own later account cannot be so easily discounted. Neurath's arguments may not have constituted a good reason to change, but that doesn't mean they were not a reason; consider the subsequent demise of coherentism once Tarski had (at least as far as Carnap and colleagues were concerned) made 'truth' a respectable notion for anti-metaphysicians. The early influence of Russellian foundationalism, mentioned above, and the tangle that Carnap and other members of the Vienna Circle got into over 'protocol sentences' in the 1930's, are further grounds for supposing that foundationalism was a continuing strand in the philosophy of Carnap's early maturity.[36]

Why, then, is it not explicit in the Aufbau, which, as Friedman notes, shows a lack of avowed interest in traditional epistemology? The Aufbau is, however, short on justification of the project in general and

[34]C. Hempel in J. Hintikka, op. cit. note 5. J. Passmore agrees with Hempel, in A Hundred Years of Philosophy (Harmondsworth, Middlesex: Penguin, 2nd edition 1968), pp. 375-79.

[35]Op. cit. note 5, p. 4. Carnap quotation from Schilpp ed. op. cit. note 2, p. 50; my emphasis. There is countervailing evidence; the official programme itself, of course, amplified in a letter to Schlick in December 1927 (quoted in Coffa, op. cit. note 6, p. 403). There, after noting that a physicalist construction was just as possible as a phenomenalist one, and that the former was best for science and the latter for epistemology, Carnap wondered whether the title 'The Logical Structure of the World' was not better suited to the former project, one which he said he intended to develop.

[36]On Tarski and Carnap see Coffa op. cit. note 6, pp. 370-74. Coffa also discerns a continuing foundationalism in Carnap's discussion of induction with Reichenbach in 1929, in which he resists the idea that theory of knowledge is simply the methodology of the empirical sciences (ibid. pp. 328-30).

long on the details of its execution (even if these are merely an 'outline'). Carnap's professed reason for wanting to mirror the 'epistemic order' is to achieve a 'rational reconstruction' of the way we arrive at our conception of the world; but the reason for that aim is itself obscure. In the history of positivism, the rationale for a phenomenalist construction is often left implicit; Mach's is a case in point. In the latter's writings, there is at least a lack of emphasis on the status of 'sensations' as objects of certain knowledge. This may be because, as a leading philosophical ingenu, he did not consider the question; or, more likely, that the foundationalist 'standpoint of consciousness' was so engrained that he did not consider it worthy of articulation.[37] It seems that in Carnap's psyche, as in Mach's, there was a predilection for foundationalism; a concern in tension with motives more consonant with the official programme.

Among these latter motives is a commitment to the 'thesis of extensionality' which generates the extensional method of the Aufbau. Foundationalism requires a stronger reduction than this method affords; but again, we see the ambivalence of Carnap's motivation. The question of extensionality bears importantly on my suggestion above that foundationalism is incompatible with the official programme because it constrains the choice of system. Is this suggestion justified? Perhaps one can admit the foundationalist strand but deny it conflicts with the official programme. Surely Carnap's epistemological partiality - the desire to mirror the 'epistemic order' - is not inconsistent with ontological neutrality. (I owe this point to C.V. Borst, so it deserves the title the Borst Objection.) An antecedent commitment to epistemological phenomenalism does not imply an antecedent commitment to ontological phenomenalism.

But the Borst Objection is really just an affirmation of the official programme; it does not affect the diagnosis offered in sections 3 and 4 above. There, it was argued that Machian notions of ontological neutrality - the subjectlessness of the given and the neutral monist picture - persisted in conflict with the Aufbau's official programme. Furthermore, it is hard to discern a rationale for epistemological phenomenalism, in the absence of a commitment to the ontological doctrine. In order to vindicate foundationalism, the phenomenalist construction must be semantically reductive; unless the equivalences are logical or semantic, the project would not show how all knowledge is reducible to a basis of certainty. But then if there were meaning-equivalences, what ensues is the disastrously sensationalist result that there are only elementary experiences. (Assuming the Humean principle that if something is ontologically distinct, it must be semantically irreducible.) So foundationalism seems to be incompatible with the idea of a pragmatic choice between constructions. Carnap did of course choose merely extensional equivalences; but there is no evidence that he did so to avoid sensationalism. Rather, he was convinced by Wittgenstein's defence of the 'thesis of extensionality' in the Tractatus; that only 'philosophers who stand aloof from mathematics' will object to the quite general claim that 'there are no intensional statements' (pp. 72-74, 76-77).[38]

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[37]Mach was clearly obsessed with the 'monstrous' conception of the unknowable ding-an-sich, and the whole ethos of his writing involves a deep hostility to abstractions which, stretching the requirements of 'thought-economy', go beyond the knowledge of the senses. Schlick, when discussing Mach's 'immanence standpoint', characterises the given as 'a realm standing above all doubt' (M. Schlick, op. cit. note 2, pp. 194-203).

[38]This is a complex issue. Coffa claims that, after the publication of the Aufbau, Carnap realised that extensional identity was not adequate for translation; but the dilemma

On the account I am arguing for, Carnap's desire to mirror the epistemic order may be seen as a further positivist relic. Epistemology of a non-foundationalist kind could be carried out in a physicalist system. Still, it may be argued that even if Friedman is too sanguine when he denies an 'antecedent commitment to phenomenalism', from the viewpoint of the total constructional project, Carnap's choice was not constrained. Nelson Goodman argues that different systems, 'although they may result from opposing philosophical attitudes or convictions, do not themselves necessarily conflict, but may be regarded as answering different problems: in the one case the problems of explaining...as much as possible in terms of phenomenal elements; in the other, the problems of explaining...as much as possible in terms of physical elements'.[39] This claim does not accord with Carnap's definition of the choice as 'simply a methodological question'. Goodman has a markedly less laissez-faire attitude than Carnap, whose view, as noted above, tends to 'arbitrarism'. (He wants to show that all philosophers agree really, so any strong philosophical commitment, even if not ontological, is a problem for him.) Both agree there must be no ontological commitment in construction theory; Goodman recognises substantial but non-ontological motivations for choice, but my claim is that, in the case of the Aufbau, these are constraining ones.[40]

The difficulty of adjudicating between these views of Carnap and Goodman is really the problem of understanding the aims of construction theory. The aim of the total project may be to show that, from whatever basis one commences, a unity of object domain, and hence a unified science, is guaranteed; or to show that because equivalent systems are possible, it makes no sense to talk of ontological commitment external to the choice of 'language-form'. Some may feel these answers are adequate; for the present writer, their inadequacy is one reason why the Aufbau remains the most baffling of philosophical classics.[41]

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remains (op. cit. note 6, p. 401n).

[39]N. Goodman, The Structure of Appearance (Indianopolis: Bobbs-Merrill, 2nd ed. 1966), p. 136.

[40]Friedman's rejection of the diagnosis of the phenomenalist construction as a necessary complement to the positivist's anti-metaphysical stance seems correct; Carnap's commitment to phenomenalism has other origins. But as John Skorupski has argued, Carnap's rejection of metaphysics may not rest on radical empiricism, but it certainly rests, or came to rest, on an epistemic conception of meaning ('The Legacy of Modernism', Proceedings of the Aristotelian Society Vol. LXXXXI 1990/1, pp. 13-15).

[41]Coffa has much to say on the question of Carnap's motivation. He suggests that when Carnap talks of applying the techniques of Principia Mathematica to the problem of reality, the 'standard, incorrect [foundationalist] interpretation of these words will offer a thread of coherence to Carnap's strategy that is otherwise hard to recognize' (op. cit. note 6, p. 214). Coffa does nonetheless believe that Carnap's purpose (not always perfectly grasped by him) was to implement a Kantian project of constitution through a holistic doctrine of meaning – and was therefore not an exercise in ontology, even though there

It might be said that foundationalism constrains choice in the sense that once Neurath's arguments against it are accepted, a physicalist construction becomes inevitable. This view is prompted by Nelson Goodman's claim that Carnap abandoned the Aufbau programme because he came to find it uncompletable. Certainly the comments in the Unity of Science which Goodman refers to suggest as much, although of course Carnap never comes out and says 'I abandoned the Aufbau project because...'[42] The alternative constructions would then cease to be equivalent, since there will be truths expressible in the physicalist system that cannot be expressed in the phenomenalist system, and the choice of a physicalist system becomes inevitable.

Goodman's account may be correct; but the connection between the refutation of foundationalism and the uncompleteability of the phenomenalist construction is, at best, one in Carnap's mind only. A weak foundationalism is compatible with the revisability of self-ascriptions of experience; as, a fortiori, is phenomenalism. One can only conclude that Carnap's reasons for abandoning the Aufbau programme remain obscure; and indeed one would expect them to mirror the ambivalent motivation for the Aufbau programme itself. For sometime proponents of a base-class of incorrigible self-ascriptions of experience, the logical positivists were strangely deficient in philosophical self-awareness.

By the time of The Logical Syntax of Language (1934), Carnap had entirely escaped from neutral monism, and had developed the vocabulary of 'internal' and 'external' questions, of 'formal' and 'material' modes, in which the Aufbau's official programme could perhaps have been expressed.[43] The Logical Syntax aimed to provide an extra-systematic viewpoint from which one could say what, according to the Aufbau and the Pseudoproblems, could not be said regarding the comparison of systems; though the new viewpoint has its own, possibly intractable, problems. Between these works of the late 1920's and the Logical Syntax there is very much a watershed. By the later date, the Aufbau official programme had, as we have seen, been quietly shelved; Carnap returned to examine it only towards the end of his life, when the 2nd edition of the Aufbau was in preparation.

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was still 'confusion between ontic and semantic matters' (ibid. pp. 232-33).

[42]N. Goodman, 'The Significance of Der Logische Aufbau der Welt', in Schilpp ed. op. cit. note 2, p. 546. He refers to 'Die physikalische Sprache als Universalsprache der Wissenschaft' (op. cit. note 34), where Carnap writes: 'There are no coefficients of physical state exclusively correlated with quantitative determinations in a single specific sensory field. This is a fact of fundamental importance...Apart from the physical language (and its sub-languages) no intersubjective language is known' (pp. 58 and 66).

[43]R. Carnap, trans. A. Smeaton, The Logical Syntax of Language (London: Kegan Paul, 1937). The new vocabulary first appears in 'Die physikalische Sprache als Universalsprache der Wissenschaft' (note 42 above), and is most clearly discussed in Carnap's article 'Empiricism, Semantics and Ontology', in Meaning and Necessity (Chicago: University of Chicago Press, 1956), also in H. Morick ed. Challenges to Empiricism (London: Methuen, 1980).

Carnap remained a consistently 'methodological' physicalist. In the <u>Aufbau</u> he had argued against what he calls the 'identity theory' (also causal interactionism and psycho-physical parallelism) (p. 38) because it is metaphysical; he would not have been happy to be adduced by Neurath in support of his robust form of physicalism.[44] Later, he contended with similar errors on the part of Feigl, who seemed to treat the mind-brain identity theory as empirical. At the very end of his career, Carnap still insisted that whether physicalism should be adopted is not a factual question about the world, but 'a question concerning the choice of a language form'.[45]

I have tried to show that the traditional picture of Carnap the logical empiricist needs modification and not rejection. Mach and Carnap shared in many respects the same positivist ideology. The attempt to generate a unified science on the basis of ontological neutrality was combined with a circumscribed role for philosophy - the dissolution of 'pseudoproblems' - as the adjunct to that science. Mach's claim that 'there is above all no Machian philosophy but at most a scientific methodology' is echoed in Carnap's proclamation in the <u>Logical Syntax</u> that 'the logic of science takes the place of the inextricable tangle of problems which is known as philosophy'. (It is probably disingenuous of Mach - for once, given his <u>ingenu</u> status - to leave room for the 'philosophy' of non-Machians.)[46]

There is, I have argued, a sense in which the <u>Aufbau</u> does exhibit an 'antecedent commitment to phenomenalism as a philosophical doctrine'. The 'positivist or sensationalist' position which he was concerned to distinguish from his own 'methodological' viewpoint had never been the straightforwardly 'ontological' thesis which the <u>Aufbau</u> presents it as, and Carnap has more in common with it than he allows. It was merely coincidental, and not yet apposite, that while Carnap was recovering from the exertions of producing the <u>Aufbau</u>, Cole Porter was working on the musical <u>Anything Goes</u>.[47]

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[44]O. Neurath, <u>Empiricism and Sociology</u> (Dordrecht: Reidel, 1973), pp. 359, 416-7.

[45]Schilpp ed., <u>op. cit.</u> note 2, p. 886.

[46]Mach quotation from <u>Erkenntnis und Irrtum</u> (Dordrecht: Reidel, 1976) p. xxxiii; Carnap quotation from <u>op. cit.</u> note 43, p. 279. There is the danger of caricaturing 'traditional positivism' into a view espoused by no major philosopher, certainly not by Mach. Coffa, for instance, claims that Carnap, 'when he let his instincts loose...would speak on behalf of [a] most primitive form of positivism', viz. a substantial foundationalism which rejects the picture of theory of knowledge as simply the methodology of the empirical sciences (<u>op. cit.</u> note 6, p. 328). But this rejected picture seems to be expressed in the quotation from Mach above.

[47]I have benefitted from many discussions with John Skorupski, David Bell and Robert Stern. I am grateful also for discussions with Michael Friedman and Jonathan Dancy, and comments from W.D. Hart, Chris Hookway, C.V. Borst and John Rogers.