Lewis’s Aufbau

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Carnap’s Aufbau

- Rudolf Carnap (1928) *Der Logische Aufbau der Welt* (“The Logical Structure of the World”)

- Aims for a characterization of the world in terms of a minimal vocabulary, from which all truths about the world can be derived.
The Vocabulary

• Carnap has one non-logical primitive:
  – The relation of recollected phenomenal similarity (between elementary experiences).

• The world-description is given using an term for this relation, and first-order logical expressions.
  – $\exists x, y, z, \ldots \ R(x,y) \ & \sim R(x,z) \ & \ldots$
The Austere Vocabulary

• Carnap eventually removes the primitive relation, yielding pure logic
  – \( \exists R, x, y, z, \ldots: R(x,y) \land \neg R(x,z) \land \ldots \)

• This threatens vacuity (Newman’s problem), so he appeals to naturalness:
  – \( \exists R, x, y, z, \ldots: \text{natural}(R) \land R(x,y) \land \neg R(x,z) \land \ldots \)
  – \( \exists_{\text{natural}} R \ \exists x, y, z, \ldots: R(x,y) \land \neg R(x,z) \land \ldots \)
The Derivation Relation

• All truths are held to be derivable from the world-description plus definitional sentences for non-basic vocabulary.

• Guiding idea: Non-basic expressions are definable in terms of more basic expressions.

• Progressively define/derive: qualia, spacetime, external objects, other minds, culture, values, ...
Problems for the *Aufbau*

(1) Goodman’s critique (construction of the visual field)
(2) Quine’s critique (definition of spatiotemporal location)
(3) Doubts about phenomenal reduction
(4) Newmans problem for structuralism
(5) Doubts about analyticity and definitions

(1)-(4) leave open alternative bases?
Lewis’s Program

• David Lewis’s life’s work: A program for semantic/epistemological/metaphysical reduction
  – Humean supervenience via conceptual analysis

• Q: Might the Lewis’s project be used to vindicate Carnap?
  – A minimal world-description that definitionally entails all truths?
Lewis’s Reductions

- Lewis reduces
  - the social and normative to the mental
  - the mental to the causal
  - the causal to the counterfactual
  - the counterfactual to the modal and the nomic
  - the modal and the nomic to the spatiotemporal and the natural
Lewis’s Analyses

• Lewis’s reductions are usually grounded in definitional conceptual analyses
  – Often via Ramsey-sentence definitions

• Definitions are held to be necessary, a priori, analytic?
Lewis on Necessity and Apriority

• Lewis held something like:
  – When $S$ doesn’t have 2D structure, $S$ is necessary iff $S$ is a priori
  – When $S$ has 2D structure, $S$ is analytically equivalent to a description using 2D structure plus indexicals.

• So: supervenience on base $B$ yields a priori entailment by $B$ plus indexicals.
Lewis’s Supervenience Base

• Lewis’s Humean supervenience base
  – Natural properties distributed in a spatiotemporal mosaic

• Yields necessitation of all truths by spatiotemporal/naturalness truths plus a totality truth.
Lewis’s A Priori Entailment Base

• Lewis’s definitional entailment base:
  – Humean supervenience base plus indexical truths:
    ‘I am ...’, ‘Now is ...’.

• Lewis’s primitive ideology:
  – Logical expressions
  – Spatiotemporal expressions
  – ‘Perfectly natural’
  – ‘I’, ‘now’.
Lewis’s Construction

• Objective world-sentence:
  – $\exists_{\text{natural}} \Phi_1, \Phi_2, \ldots \ R(\Phi_1, \Phi_2, \ldots)$
  – There exist natural properties $\Phi_1, \Phi_2, \ldots$ distributed in spacetime such that $R(\Phi_1, \Phi_2, \ldots)$

• Subjective world-sentence: Objective world-sentence plus ‘I am...’, ‘Now is...’

• All truths (relative to speaker) definitionally entailed by subjective-world sentence?
Complication: Modal Realism

• Lewis’s reduction of modality:
  – □p
    iff p is true in all possible world
    iff p is true in all spatiotemporal islands.

• But: ‘p is true in all spatiotemporal islands’ surely (?) doesn’t analytically entail ‘□p’.
Complication: Quiddities

• Lewis on Ramseyan humility:
  – ‘R(mass, charge, …)’ necessitates all truths
  – ‘∃\text{natural } \Phi_1, \Phi_2 R(\Phi_1, \Phi_2, …)’ does not [permutation, aliens].

• But: this is consistent with the claim that ‘∃\text{natural } \Phi_1, \Phi_2 R(\Phi_1, \Phi_2, …)’ a priori entails all expressible truths.
  – ‘mass’, ‘charge’, etc have 2D structure
  – Forget inexpressible truths.
Narrowing the Base

• Lewis’s Humean base:
  – ∃_{natural} \Phi_1, \Phi_2, ... R(\Phi_1, \Phi_2, ...)
  – R appeals to spacetime, logic, and indexicals

• Q: can we get rid of spacetime
  – ∃_{natural} \Phi_1, \Phi_2, \Phi_3, \Phi_4, ... R(\Phi_1, \Phi_2, \Phi_3, \Phi_4, ...)
  – R appeals to logic and indexicals?
Analysing Spacetime

- This needs a definition of spatiotemporal properties/relations in terms of naturalness plus logic
  - Collect structural platitudes about space and time.
  - E.g. time = that dimension in which things evolve in a predictable way?
  - Space = nontemporal dimensions in which things are distributed?
Lewis on Spacetime

• Q1: Does Lewis ever suggest this or any sort of analysis of spatiotemporal concepts?

• Q2: Is the analysis plausible?
Austere Base

• Austere Base:
  • \( \exists_{\text{natural}} \Phi_1, \Phi_2, \Phi_3, \Phi_4, \ldots \) \( R(\Phi_1, \Phi_2, \Phi_3, \Phi_4, \ldots) \) & ‘I am…’ & ‘Now is …’
    – There exist such-and-such natural properties and relations distributed in such-and-such way with respect to each other (and I am ... and now is ...).

• Like Carnap’s final base in the Aufbau: logic, naturalness [plus indexicals].

• A pure structure sentence?

• An austere base for constructing the world.
Challenges

• Does the austere Lewisian Aufbau work?
  – One might challenge the analysis of the spatiotemporal, the nomic, the mental, ...
  – One might also challenge the appeal to definitions

• This depends on substantive commitments

• It also leaves open less austere Aufbaus
  – Nomic, phenomenal, spatiotemporal in base?
  – A priori entailment rather than definition?
Conclusion

• Lewis’s life’s work offers the materials for a Carnapian construction of the world.