

# Gideon Rosen: “Metaphysical Dependence: Grounding and Reduction”

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*eidos* seminar  
8/10/2008

## 1. The notion of grounding

Forms of expression:

- The fact that  $p$  is *grounded in* the fact that  $q$ , the fact that  $r$ , ...
- =  $p$  in virtue of the fact that  $q$ , the fact that  $r$ , ...
- =  $p$  because  $q$ ,  $r$ , ...
- = the fact that  $p$  is explained by the fact that  $q$ , the fact that  $r$ , ...
- =  $p \triangleleft q, r, \dots$

Grounding is one-many, not distributive. Sentential operator ( $\triangleleft$ ) vs. predicate on facts ( $[p] \leftarrow [q], [r], \dots$ ).

Historical remark: Bolzano 1973 (first published 1837) a pioneer.

## 2. The scope of grounding

Examples of claims involving the notion:

1. Dispositional features not brute, but grounded in categorical features
2. Legal propositions not brutally true, but hold in virtue of non-legal, e.g. social, facts
3. Morally wrong acts are thus in virtue of non-moral facts
4. Normative facts are grounded in natural facts
5. Semantic properties are exemplified in virtue non-semantic facts
6. Phenomenal facts are grounded in neurophysiological facts
7. Determinable-exemplification grounded in determinate-exemplification.

Some concepts involving the notion of grounding:

1. Existential dependence
2. Supervenience
3. Truthmaking.

Some topics where the notion may be invoked:

1. Mereological essentialism
2. The essentiality of origins
3. The characterization of substances
4. The metaphysics of fictional discourse

5. Mathematical structuralism
6. Intrinsicity
7. Internal vs. external properties and relations
8. Aristotelian conception of universals.

Schaffer 2009: the job of the metaphysician should be to uncover the grounding structure of the universe.

### 3. The informal vs. formal stances towards grounding

Rosen:

The notion in question—the ‘in virtue of’ idiom, or as I shall call it, the grounding idiom—is widely regarded as unsuitable for serious analytic purposes. The idiom is tolerated in the loose prose whose function is to focus the readers attention on an issue. But when it comes time to say exactly what we mean and to set out our claims and counterclaims as carefully as we can, it is generally supposed that all reference to this notion must drop out in favor of idioms and constructions that we really understand.

Should the grounding idiom be rejected because it is unclear or unsuitable for serious philosophical purposes? Rosen lists possible complaints, and offers replies:

- Lack of adequate definition. Reply: there must be terms we cannot define;
- Hard to be clear on the exact extension. Reply: this holds for various notions as well, e.g. metaphysical possibility and necessity;
- We have clearer alternatives which allow us to say everything we want to say, e.g. modal notions. Reply: it is well known that modal characterizations miss something;
- Ambiguity between various forms of grounding. Reply: should be a reason to try and resolve the purported ambiguity rather than reject the notion.

What friends of grounding should do: provide putative examples, list principles concerning the notion and its interconnections with other notions, try to show that the notion is fruitful, perhaps that we cannot do without it.

### 4. Some general principles

Rosen:

Facts are individuated by their constituents and the manner of their composition. This gives a very fine-grained notion of fact, but that is what is wanted for our purposes.

But fine-grained up to which point?

Partial grounding:  $[p] \leftarrow \Delta \equiv \exists \Gamma (\Delta \subseteq \Gamma \wedge [p] \leftarrow \Gamma)$ . (Non-emptiness condition if  $\Delta$ ,  $\Gamma$  taken to be sets.)

Rosen’s structural principles:

**Strong asymmetry:** If  $[p] \leftarrow [q], \Gamma$ , then not  $[q] \leftarrow [p], \Gamma$

**Strong irreflexivity:** Not  $[p] \leftarrow [p], \Gamma$

**Asymmetry:** If  $[p] \leftarrow [q]$ , then not  $[q] \leftarrow [p]$

**Irreflexivity:** Not  $[p] \leftarrow [p]$

(If  $\Gamma$  taken to be a set, the latter two principles follow from the other ones; if taken to be a plurality, that's not the case.)

At certain points, he invokes transitivity but it is not in the list. We probably want:

**Transitivity:** If  $[p] \leftarrow [q], \Gamma$  and  $[q] \leftarrow \Delta$ , then  $[p] \leftarrow \Delta, \Gamma$ .

He may also have mentioned:

**Factivity:** If  $[p] \leftarrow \Gamma$ , then  $p \wedge \widehat{\Gamma}$ .

He also has:

**Necessity:** If  $[p] \leftarrow \Gamma$ , then  $\square(\widehat{\Gamma} \supset p)$ .

Monotonicity rejected.

Well-foundedness an issue.

Interaction with logic:

- If  $p$ , then  $[p \vee q] \leftarrow [p]$
- If  $p$  and  $q$ , then  $[p \wedge q] \leftarrow [p], [q]$
- If  $\varphi(a)$ , then  $[\exists x\varphi(x)] \leftarrow [\varphi(a)]$ .

## 5. Universal truths

Some cases:

- If all  $F$ s are  $G$ , then  $[\text{all } F\text{s are } G \text{ or } H] \leftarrow [\text{all } F\text{s are } G]$ ;
- Cases deriving from the principle: If  $\square_x p$ , then  $[p] \leftarrow [\square_x p]$ ;
- Cases deriving from the principle: If it is a strong law that  $p$ , then  $[p] \leftarrow [\text{it is a strong law that } p]$ ;
- If  $\forall xFx$  is a true accidental generalization, then  $[\forall xFx] \leftarrow [Fa], [Fb], \dots, T$ , where  $T$  is the totality fact  $[\forall x(x = a \vee x = b \vee \dots)]$ .

Rosen suggests that on a Finean conception of modality, if  $\square p$ , then  $[\square p] \leftarrow [\exists X \square_X p]$ .

## 6. Grounding and reduction

Reduction:

- Its being the case that  $p$  reduces to its being the case that  $q, r, \dots$  = its being the case that  $p$  consists in nothing more than its being the case that  $q, r, \dots$

A relation between propositions. See also Fine 2001.

Plausible:

- If (i)  $q, r, \dots$  and (ii) its being the case that  $p$  reduces to its being the case that  $q, r, \dots$ , then  $[p] \leftarrow [q], [r], \dots$

Question: Are there really two notions here?

Is Armstrongian “no addition to being” grounding or reduction?

## 7. Determinable / Determinate vs. Genus / Species

A suggestion:

- (a) For all  $x$ ,  $\langle Sp(x) \rangle$  reduces to  $\langle Ge(x) \wedge Di(x) \rangle$  ( $Sp$  species of genus  $Ge$ ,  $Di$  appropriate differentia);
- (b) For all  $x$ , if  $d(x)$ , then  $[D(x)]$  is grounded in  $[d(x)]$  ( $d$  determinate of  $D$ );
- (c) For all  $x$ , if  $Sp(x)$ , then  $[Ge(x)]$  is NOT grounded in  $[Sp(x)]$ .

(c) follows from (a) and previous principles.

Two explanations of (b):

- For all  $x$ ,  $\langle D(x) \rangle$  reduces to  $\langle d_1(x) \vee d_2(x) \vee \dots \rangle$ ;
- For all  $x$ ,  $\langle D(x) \rangle$  reduces to  $\langle \exists \delta (\delta \text{ is a } D\text{-determinate} \wedge \delta(x)) \rangle$ .

## 8. Grounding and essence

A suggestion: all facts of grounding are ultimately explained by the nature of some things. A particular suggestion: *Formality + Mediation*. Non-reductive materialism as a potential counterexample.

## References

- Bolzano, B. 1973. *Theory of Science*, Dordrecht: D. Reidel.
- Fine, K. 1994. “Essence and Modality”, *Philosophical Perspectives*, 8: 1–16.
- Fine, K. 2001. “The Question of Realism”, *Philosopher's Imprint*, 1(1). (Online publication.)
- Schaffer, J. 2009. “On What Grounds What”, in D. Chalmers, D. Manley, and R. Wasserman (eds), *Metametaphysics*, Oxford: Oxford University Press.