What – and how – do we learn when we “give an ontology”?

Paul Teller

prteller@ucdavis.edu

April, 2011
Difficulties with the idea of “giving an ontology”
The case of atoms
Argument for atoms

Appeal to atoms unifies a wide range of phenomena

– Atoms the main “gear” in the underlying mechanism

– No atoms, no mechanism, no unification

• Or:

– The No Miracles Argument
Imperfections in our accounts of atoms?

- “Convergent realism”
- ‘Atom’ refers; talk of atoms provides a sound ontology
Contrast atoms with the ontology of continuum hydrodynamics
Contrast atoms with the ontology of continuum hydrodynamics

- Since water is made up of atoms
- Characterizing as a continuum is merely a USEFUL FICTION
Atoms: Real

Continuous medium: Useful fiction
Atoms: Real

Continuous: Useful fiction

????
Reconsidering atoms

• Atoms are made up of quarks and electrons
• These are quanta of the quantum field
• Quantum field theory is a field, not a particle theory
Now reconsider the hydrodynamic account of water

• Think of it as a field theory

• At a very small scale there is grain, but still continuous

• That we ignore when considering the fluid properties of water

NOW WHAT’S THE “USEFUL FICTION”?!
Now reconsider the hydrodynamic account of water

- Think of it as a field theory
- At a very small scale there is grain, but still continuous
- That we ignore when considering the fluid properties of water

NOW WHAT’S THE “USEFUL FICTION”?!
Appeal to Quantum Field Theory for our ontology?

• Idealizations – just as for continuous fluids and atoms

• In most applications the “theory” is an approximation scheme

• Doesn’t work to recover the rest of the physical world

• And the “theory” is internally inconsistent!
Appeal to Quantum Field Theory for our ontology?

- Idealizations – just as for continuous fluids and atoms
- In most applications the “theory” is an approximation scheme
- Doesn’t work to recover the rest of the physical world
- And the “theory” is internally inconsistent!
Appeal to Quantum Field Theory for our ontology?

- Idealizations – just as for continuous fluids and atoms
- In most applications the “theory” is an approximation scheme
- Doesn’t work to recover the rest of the physical world
- And the “theory” is internally inconsistent!
Appeal to Quantum Field Theory for our ontology?

- Idealizations – just as for continuous fluids and atoms
- In most applications the “theory” is an approximation scheme
- Doesn’t work to recover the rest of the physical world
- And the “theory” is internally inconsistent!
Alternative – the “Water/Water” moral

- Representation with atoms or continuous media are alternative ways of intellectually “grasping” the world
Difficulties with the idea of “giving an ontology”: Foundational theories

• Are “foundational theories” privileged in giving us an ontology?

• We’ve already seen the shortcomings of quantum field theory
Difficulties with the idea of “giving an ontology”:
Foundational theories

- Are “foundational theories” privileged in giving us an ontology?
- We’ve already seen the shortcomings of quantum field theory
The best case: Relativity

• In every respect more accurate than Newtonian Mechanics?

• So “closer to the truth”?

• So provides the privileged depiction of what there is?
“Closeness to the truth” and similarity

• “Close(er) to the truth” is problematic

• For s to be closer to the truth than s’ is for
  
  – What is described by s
  
  – To be more similar to the way things actually are
  
  – Than what is described by s’
“Closeness to the truth” and similarity

• “Close(er) to the truth” is problematic

• For s to be closer to the truth than s’ is for
  – What is described by s
  – To be more similar to the way things actually are
  – Than what is described by s’
“Closeness to the truth” and similarity

• ‘Similarity’ isn’t univocal

• So s can be closer to the truth/more accurate than s’ in some respects

• s’ closer than s in other respects
So what does relativity give us?

• At most relativity provides us with the the BEST currently available picture of what there is in respects that we care about

• But does it always do even this?

• ‘Best’ is also not univocal!
Do what does relativity give us?

- At most relativity provides us with the BEST currently available picture of what there is in respects that we care about.

- But does it always do even this?

- ‘Best’ is also not univocal!
What do relativity and Newtonian mechanics deliver?

• Neither deliver exact truths

• Sometimes relativity delivers more accurate representations

• When we can calculate!

• Example of the tides
What do relativity and Newtonian mechanics deliver?

• Generalizing the moral of the water/water story
  – Two very effective representational tools for intellectually grasping the world
  – The water/water moral once more
Flaw in the argument?
There are things
We just don’t know exactly what their properties are

• (“Things” = “Individuatatable objects”)
Whence the prejudice for thing ontologies?

• Experience of ordinary objects

• Indoctrination that goes back to the “corpuscularian philosophy”

• Built into our verbal system of representation

• Lack of an intelligible alternative?
Whence the prejudice for thing ontologies?

- Experience of ordinary objects
- Indoctrination that goes back to the “corpuscularian philosophy”
  - Built into our verbal system of representation
- Lack of an intelligible alternative?
Whence the prejudice for thing ontologies?

• Experience of ordinary objects

• Indoctrination that goes back to the “corpuscularian philosophy”

• Built into our verbal system of representation

• Lack of an intelligible alternative?
Whence the prejudice for thing ontologies?

• Experience of ordinary objects

• Indoctrination that goes back to the “corpuscularian philosophy”

• Built into our verbal system of representation

• Lack of an intelligible alternative?
Continuum alternatives to thing ontologies

- A world of graded qualities
- “Thing ontologies” have no privileged status
Continuum alternatives to thing ontologies

- A world of graded qualities
- “Thing ontologies” have no privileged status
Things of ordinary experience?
Problemtizing the ontology of ordinary objects

• G. E. Moore’s hands; the stone that Dr. Johnson kicked

• No doing without THE hand and THE stone

• Problem of indefinite boundaries

• Can’t put put together things from very small thing-parts

• What then should we make of hands and stones?
Problemtizing the ontology of ordinary objects

- G. E. Moore’s hands; the stone that Dr. Johnson kicked
- No doing without THE hand and THE stone
- Problem of indefinite boundaries
  - Can’t put put together things from very small thing-parts
  - What then should we make of hands and stones?
Problemtizing the ontology of ordinary objects

• G. E. Moore’s hands; the stone that Dr. Johnson kicked
• No doing without THE hand and THE stone
• Problem of indefinite boundaries
• Can’t put put together things from very small thing-parts
• What then should we make of hands and stones?
Problemtizing the ontology of ordinary objects

- G. E. Moore’s hands; the stone that Dr. Johnson kicked
- No doing without THE hand and THE stone
- Problem of indefinite boundaries
- Can’t put put together things from very small thing-parts
- What then should we make of hands and stones?
Experience as a system of representations

- In some suitably broad sense, perception is or constitutively involves representation
  - “aboutness”
  - Has veridicality conditions
  - Can misrepresent
Experience as a system of representations

- There is no such thing as completely unmediated, “representationless access”

- Once we see ourselves as working through representations, there is room to apply the water/water moral
  - We can endorse experience without privileging its ontology (Things don’t provide a privileged ontology)
  - We can endorse experience even though its ontology won’t stand up to too intense scrutiny
Experience as a system of representations

• There is no such thing as completely unmediated, “representationless access”

• Once we see ourselves as working through representations, there is room to apply the water/water moral

• We can endorse experience
  – without privileging its ontology
  – and even though its ontology won’t stand up to intense scrutiny
Dr. Johnson, G.E. Moore, and our sense of reality: Continued resistance to the water/water moral

- In the case of experience we have a sense of immediacy, perhaps a hard wired “reifying instinct”, that
  - For good practical reasons
  - Is extremely hard to shake
Breaking the instinct: Analogizing our approach to objects with to our approach to color

- Consider this red piece of paper
  - Plainly a real external physical object
  - Plainly with the intrinsic property of being red

- We have become sophisticated about color
  - Our color visual system doesn’t “take pictures”
  - Tri-vs. tetra-chromats
Breaking the instinct: Analogizing our approach to objects with to our approach to color

• Consider this red piece of paper
  – Plainly a real external physical object
  – Plainly with the intrinsic property of being red

• We have become sophisticated about color
  – Our color visual system doesn’t “take pictures”
  – Tri-vs. tetra-chromats
Breaking the instinct: Analogizing our approach to objects with to our approach to color

• So when you “see” the redness of the piece of paper

• Something much more complicated is going on

• In daily affairs you still see the paper “as colored”
Breaking the instinct: Analogizing our approach to objects with to our approach to color

• So when you “see” the redness of the piece of paper

• Something much more complicated is going on

• In daily affairs you still see the paper “as colored”
Breaking the instinct: Analogizing our approach to objects with to our approach to color

- If you can do it for color

- You can do it for things!
The illusion of perfection
The illusion of perfection

• Where a representation will serve, we ignore its imperfections

• That is, within a domain,
  – it functions as correct/true
  – So we treat it/think of it as correct/true

• But step into another domain and one may need alternative representational tools
The alternative frameworks of Carnap et. al.

- We are always working within one or another
  - Carnapian frameworks
  - Kuhnian disciplinary matrix
  - Stalnacker’s conversational common ground
- Successful statements in a framework function as “just plain true”
- But they are not, and in other domains other frameworks will work better
The alternative frameworks of Carnap et. al.

- We are always working within one or another
  - Carnapian frameworks
  - Kuhnian disciplinary matrix
  - Stalnacker’s conversational common ground

- Successful statements in a framework function as “just plain true”

- But they are not, and in other domains other frameworks will succeed better
The illusion of perfection

• Plausibly
  – For every problem domain there is an adequate framework

• But not
  – There is a framework adequate for every problem domain!
The illusion of perfection

• Plausibly
  – For every problem domain there is an adequate framework

• But not
  – There is a framework adequate for every problem domain!
The alternative frameworks of Carnap et. al.

- This is just the water/water moral writ large
Is this skepticism?

• There are no colors, rocks, chairs, people, cells, atoms…!

• Does sophistication about color amount to color-skepticism?
Is this skepticism?

• There are no colors, rocks, chairs, people, cells, atoms…!

• Does sophistication about color amount to color-skepticism?
Is this skepticism?

• There are no colors, rocks, chairs, people, cells, atoms…!

• Does sophistication about color amount to color-skepticism?
Is this skepticism?

- This “skepticism” is harmless
  - To say “there are no colors” is misleading
  - Colors as intrinsic properties is a simplification
  - Of our current much more complex account of color vision
  - (That is also a simplification!)
Relativization of what is real

• (Oh dear...)
Relativization of what is real

• (Oh dear…)

60
Relativization of what is real

• Real for you, not real for me…
  – BOOOO!

• Real in such and such respects or such and such senses
  – Hmm….
Relativization of what is real

• Real for you, not real for me…
  – BOOOO!

• Real in such and such respects or such and such senses
  – Hmm….
Relativization of what is real

• Real for you, not real for me…
  – BOOOO!

• Real in such and such respects or such and such senses
  – Hmm....
Relativization of what is real

- Real for you, not real for me…
  - BOOOO!

- Real in such and such respects or such and such senses
  - Hmm…. 
Relativization of what is real

• “Is real” isn’t a simple all or nothing affair

• Are they real??
  – chairs, clouds, rainbows, shadows, mirages, fairies real?
  – cells, atoms, quarks, space-time curvature, virtual particles, image charges real?

• Real/not real
  – Very useful dichotomy for many purposes
  – But like ANY representational scheme, can’t be applied everywhere without refinement.
Relativization of what is real

• “Is real” isn’t a simple all or nothing affair

• Are they real??
  – chairs, clouds, rainbows, shadows, mirages, fairies real?
  – cells, atoms, quarks, space-time curvature, virtual particles, image charges?

• Real/not real
  – Very useful dichotomy for many purposes
  – But like ANY representational scheme, can’t be applied everywhere without refinement.
Relativization of what is real

• “Is real” isn’t a simple all or nothing affair

• Are they real??
  – chairs, clouds, rainbows, shadows, mirages, fairies?
  – cells, atoms, quarks, space-time curvature, virtual particles, image charges?

• Real/not real
  – Very useful dichotomy for many purposes
  – But like ANY representational scheme, can’t be applied everywhere without refinement.
Relativization of what is real

• Premise:
  – No sharp line that divides the “observational” from the “theoretical”
Relativization of what is real

- Apply to an argument for realism (for referents of theoretical terms)
  - Ordinary objects are (in various ways) real
  - No sharp demarcation between ordinary objects and purported referents of our theories
  - So, e.g., atoms are real (in the kinds of ways in which ordinary objects are real)
Relativization of what is real

- Second implication of no clear demarcation to what things are objects of perception
  - We know the theoretical only by a pallet of models
  - No sharp demarcation
  - We know the ordinary objects of perception only by a pallet of models.
Relativization of what is real

- Put the last two together
  - Our sense of reality spreads downward
  - Our grip on the real by multiple perspectives spreads upward
Relativization of what is real

- Put the last two together
  - Our sense of reality spreads downward
  - Our grip on the real by multiple perspectives spreads upward
From conflicting to complementary ontologies

• Review the problem of (apparently) conflicting ontologies
  – Just what are these atoms?
  – Whatever they are, they are not fields! And conversely
  – (Apparently) such ontologies conflict, and we must choose
From conflicting to complementary ontologies

- Our representations, thought of as precise, are one and all, idealizations
- Reinterpret them as imprecise: The world is something like this
From conflicting to complementary ontologies

• Where the precise versions of ‘atoms’ and ‘fields’ conflict

• Their imprecise reinterpretations constitute consistently complementary representations
What is it to give an ontology?

- A pallet of alternative ontologies as channels of insight for perceptually or intellectually grasping “how the world is put together”

- Alternative ontologies are posits of alternative models, often complementary ontologies/models are viable

- Probing reality with a range of representational tools that we make (with much help from nature)

- Getting it exactly right is out of human reach