Vagueness

- Procedural Work
- Vagueness and Classical Logic
- Supervaluationism
- Degree Theory
- Epistemic Theory
- Vague Objects

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Procedural Work

- Presentation, Week 6 (17th/21st November)
 - In pairs, chose a paradox from Clark, *Paradoxes from A to Z* (Routledge, 2002/7)
 - Email choice to me (ka519@york.ac.uk) or Mike Beaney (mab505@york.ac.u) by 14th November
 - 5-10 mins talk, 5 mins questions (*from everyone*!)
 - Hand in 750 word essay (individually or together)
- Tutorial, Week 7 (24th/28th November)
 - 15mins, in pairs
 - Monday: Keith Allen (D/140); Friday: Mike Beaney (D/146)

Grade Descriptors

80-100	An exceptional answer that shows an ability to organize sophisticated material in response to a question, in which there is evidence of original and independent thought, and which is presented in a clear and concise manner.
70 - 79	An excellent answer that is a well-structured response to the question, which shows a capacity for critical reflection and independent thought, and which displays an understanding of subtle aspects of the philosophical debate.
60 - 69	A good answer that is well-organized, which presents philosophical views and problems accurately and concisely, and which shows a solid grasp of the main issues and a degree of philosophical judgment.
50-59	A satisfactory answer that shows understanding of a decent range of module material and an ability to organize it in response to the question.
40-49	An essay that goes some way to answering the question and which adequately presents a limited range of relevant module material.
35-39	An essay that makes some attempt to answer the question and which shows some understanding of a limited range of module material.
0-34	Work that shows little or no understanding of the basic issues covered in the module material.

Further Help

Essay Technique

- <u>http://www.york.ac.uk/depts/phil/currentugrads/essay4.pdf</u>
- <u>http://www.jimpryor.net/teaching/guidelines/writing.html</u>
- <u>http://www-</u> <u>users.york.ac.uk/%7Eka519/Teaching_files/Essay%20Techniqu</u> <u>e-1.pdf</u>

How We Mark Essays

• <u>http://www.york.ac.uk/depts/phil/current/howdowemark.htm</u>

Vagueness

- E.g. 'tall', 'heap', 'red', 'bald'
- Borderline cases
- No fact of the matter?
- Susceptible to Sorites Arguments
- Distinguish from: relativity, ambiguity

Sorites Argument

- 1) 10000 grains (suitably arranged) is a heap
- 2) If 10000 grains is a heap, then 9999 grains is a heap
- 3) If 9999 grains is a heap, then 9998 grains is a heap...

Therefore, 1 grain is a heap

Sorites Argument

- Modus Ponens: p; if p then q; $\therefore q$
 - 10000 grains is a heap (*p*)
 - if 10000 grains is a heap, then 9999 grains is a heap (if *p* then *q*);
 - 9999 grains is a heap (*q*)
 - Part of the meaning of 'if...then' (Dummett)
- Paradox: apparently false conclusion from apparently true premisses and apparently valid reasoning
- Note: doesn't depend on example

Eliminate Vague Terms?

- e.g. Frege, Russell: 'logicism'
- Natural language a phenomenon to study
- Valid arguments using vague terms
- Vague terms useful...and indispensable?

Propositional Logic

- p, q, etc. 'propositional variables' (i.e. stand for 'snow is white', 'grass is green' etc.)
- Logical connectives
 - &: 'and'
 - v: 'or'
 - ¬: 'not'
 - $-\supset$, \rightarrow : 'if...then'
 - \Leftrightarrow : 'if and only if' (iff)
- Meaning of connectives determined by truth tables
- Compositionality: truth-value of compound propositions determined by t-v of constituents

Classical Logic

- Includes
 - Modus ponens: $p, p \supset q$; therefore, q
 - Law of excluded middle: $p \vee \neg p$
 - Law of non-contradiction: $\neg(p \& \neg p)$
 - ...and much else
- 'Classical logic and semantics are vastly superior to the alternatives in simplicity, power, past success, and integration with theories in other domains' (T. Williamson, 'Vagueness and Ignorance', *Aristotelian Society Supp. Vol.* 1992)
- But does it accurately describe reasoning in natural language?

Positive extension

- True
- E.g. 7000-10000 grains

Penumbra

- Neither true nor false
- E.g. 301-6999 grains

Negative extension

- False
- E.g. 0-300 grains

- Admissible to 'sharpen' in penumbra
 - E.g. 350 grains is a heap, 349 not a heap
 - Sharpening removes penumbra
 - Sharpening arbitrary; other sharpenings also admissible
- Truth and falsity
 - A sentence is true iff true on all admissible sharpenings
 - A sentence is false iff false on all admissible sharpenings
 - A sentence is neither true nor false iff it is neither true nor false on all admissible sharpenings
 - True is 'supertruth'
- Sorites: conditional premisses neither true nor false in penumbra

Law of Excluded Middle (LEM): $p \vee \neg p$

Bivalence: every sentence is either true or false

- $(\forall p)$ ('p' is true v 'p' is false)

- Bivalence employs concepts LEM does not: true, false
- LEM 'object language', Bivalence 'meta-language'
- Supervaluationism *accepts LEM but not Bivalence*
 - 'x is a heap' is neither true not false (penumbral)
 - 'Either x is a heap or x is not a heap' is true on all admissible sharpenings, therefore true
 - (Disjunction can be true without either disjunct being true!)
- Preserves classical logic...but is this a good thing?

- Sorites conditionals can be generalized
 - For all numbers n, if n is a heap, then n-1 is a heap
 - $\forall n \text{ (if } n \text{ is a heap, then } n-1 \text{ is a heap)}$
- Supervaluationism denies generalization
 - There is an *n*, such that *n* is a heap, but n-1 is not a heap
 - $(\exists n)(n \text{ is a heap } \& \neg n-1 \text{ is a heap})$
 - (Equivalent to: $\neg(\forall n)(n \text{ is a heap } \& \neg n-1 \text{ is a heap}).)$
 - (Existential generalization can be true without a true instance!)
- Preserves classical logic...but is this a good thing?

- Higher-order vagueness
 - Sharp boundaries between +ve extension, penumbra and -ve extensions?
 - Definite borderline cases and borderline borderline cases
- Revised Sorites
 - 1) 10000 grains is *definitely* a heap
 - 2) If 10000 grains is *definitely* a heap, then 9999 grains is *definitely* a heap...
 - 3) 7000 is *definitely* a heap

Q: are these arguments decisive?

Degrees of Truth

- Different sentences 'more or less true'
- Degree of truth of compound sentences determined by degrees of truth of constituents
 - E.g. 'if *p*, then *q*': degree of truth of conditional no higher than degree of truth of 'consequent', *q* (the 'antecedent' is *p*)
- Degrees of truth assigned on the basis of comparative judgments
- Response to Sorites
 - Conditional premisses are not wholly true
 - Modus ponens does not preserve degree of truth: 'leakage'

For Degrees of Truth

- Often talk about things being 'true to some extent'
- Modus ponens not *always* invalid
 If degree of truth of *p* and *q* is 1

Problems

- Higher order vagueness: sharp borderline between 1 and 0.999...
- Other logical connectives
 - X is definitely red and intermediately small
 - Y is intermediately red and intermediately small
 - '&': degree of truth of lowest conjunct
 - 'X is red and small' = 'Y is red and small'

Epistemic Theory

- Vague predicates draw sharp boundaries, but we don't know where
 - 'Epistemic' because vagueness is ignorance, i.e. lack of knowledge
- Response to Sorites
 - One of the conditional premisses is false
 - $-(\exists n)(n \text{ is a heap, but } n-1 \text{ is not a heap})$
 - ...but we don't know which

For Epistemic Theory

- Preserves classical logic
- Higher-order vagueness: ignorance of ignorance
- Verificationism implausible
- Explains ignorance: margins of error
- Sorites argument a *reductio ad absurdum*
- Other responses problematic
- No decisive refutation?

Q: are these good arguments?

Against Epistemic Theory

- Implausible
- Meaning and use

Q: are these good arguments?

Vague Objects

- Epistemic theory: no vague objects
- Semantic theories: consistent with, but do not entail

Against Vague Objects

- Facts about identity determinate
 - x = x definitely true
 - If x = y, then x = y definitely true
 - Leibniz's Law: if x = y, then everything true of x is true of y
- If objects were vague, then facts about identity would not be determinate (which they are not: see above)
 - E.g. indefinite whether cloud a = cloud b