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Nihilism and Supertruth

5 November, 2006

Heaps

1 grain of sand is not a heap.

If 1 grain of sand is not a heap,
then 2 grains of sand is not a heap.

If 2 grains of sand is not a heap,
then 3 grains of sand is not a heap.

Heaps

....

If 999,999 grains of sand is not a heap,
then 1,000,000 grains of sand is not a heap.

So, 1,000,000 grains of sand is not a heap

Baldness

A man with 140,000 hairs on his head is not bald.

If a man with 140,000 hairs on his head is not bald, then a man with 139,999 hairs on his head is not bald.

If a man with 139,999 hairs on his head is not bald, then a man with 139,998 hairs on his head is not bald.

Baldness

....

If a man with 1 hair on his head is not bald, then
a man with no hair on his head is not bald.

So, a man with no hair on his head is not bald.

Looks red

A long row of tiles.

The first tile looks blue.

For each adjacent pair of tiles, if one tile looks blue, then the other tile looks blue.

Therefore, the last tile looks blue.

But the last tile looks green!

And so

heap, bald, chair, thin, obese, tall, tadpole, book,
toy, happy, clever, few, cloudy, pearl, beard,
game, adult, child, mountain, lake, hot, heavy

Today and Wednesday

Accept conclusion (nihilism)

Truth value gaps (supervaluationism)

Degree theories

Web Discussion

<http://www.hku.hk/discuspro/messages/2533/2533.h>

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Accept conclusion

No heaps!

No man is bald!

Nihilism

P. Unger (1979)

“There are no ordinary things”

“I do not exist”

“Why there are no people”

Nihilism about heaps

Nihilism about heaps: There are no heaps.

Merits of nihilism:

Explains why sorites reasoning appears sound:
it is sound.

There is no paradox here.

Problems with nihilism

The incredulous stare: Unbelievable!

What about the reverse sorites?

Heaps

1 grain of sand is not a heap.

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then 2 grains of sand is not a heap.

If 2 grains of sand is not a heap,
then 3 grains of sand is not a heap.

Heaps

....

If 999,999 grains of sand is not a heap,
then 1,000,000 grains of sand is not a heap.

So, 1,000,000 grains of sand is not a heap

Heaps in reverse

1,000,000 grains of sand is a heap.

If 1,000,000 grains of sand is a heap,
then 999,999 grains of sand is a heap.

If 999,999 grains of sand is a heap,
then 999,998 grains of sand is a heap.

Heaps in reverse

....

If 2 grains of sand is a heap,
then 1 grain of sand is a heap.

So, 1 grain of sand is a heap

The reasoning generalized

Start with a non-heap

A small change does not change a non-heap into a heap.

Starting from a non-heap, by a series of small changes, you can make anything.

There are no heaps.

In reverse

Start with a heap

A small change does not change a heap into a non-heap.

Starting from a heap, by a series of small changes, you can make anything.

Everything is a heap.

A contradiction?

There are no heaps.

Everything is a heap.

Not a contradiction

What if nothing exists?

Then:

There are no heaps.

Everything is a heap.

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Should we conclude this?

Nothing exists.

Should we conclude this?

Nothing exists.

What is the problem with nihilism?

Should we conclude this?

Nothing exists.

What is the problem with nihilism?

We do not need to draw this conclusion.

The reasoning

Start with a non-heap

A small change does not change a non-heap into a heap.

Starting from a non-heap, by a series of small changes, you can make anything.

There are no heaps.

In reverse

Start with a heap

A small change does not change a heap into a non-heap.

Starting from a heap, by a series of small changes, you can make anything.

Everything is a heap.

In reverse (revised)

Assume that there is at least one heap

A small change does not change a heap into a non-heap.

Starting from a heap, by a series of small changes, you can make anything.

Everything is a heap.

If there is at least one heap, then everything is a heap.

What we should conclude?

There are no heaps.

If there is at least one heap, then everything is a heap.

Today and Wednesday

Accept conclusion (nihilism)

Truth value gaps (supervaluationism)

Degree theories

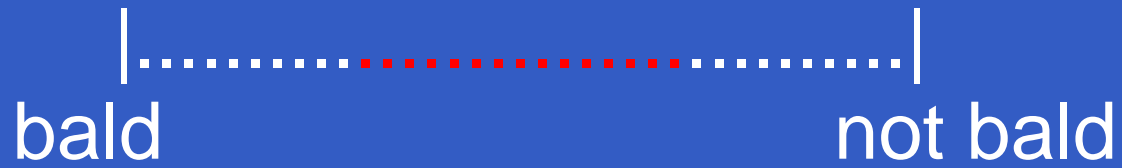
Three features of vague terms

Penumbra

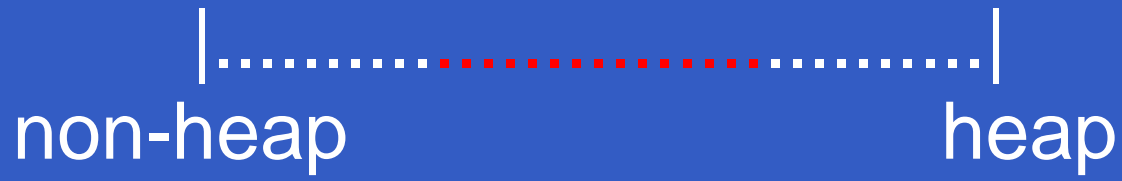
Tolerance

Sorites susceptibility

Penumbra



Penumbra



Vagueness

That is a heap.

Smith is bald.

Truth value gap

"That is a heap"

definite non-heap: false

definite heap: true

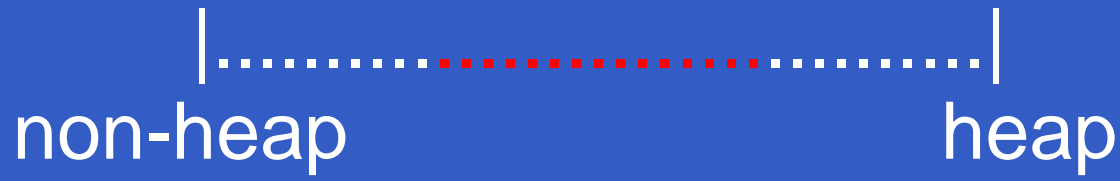
penumbra: indeterminate

Sharpening

Make "is a heap" precise by drawing a sharp line between heaps and non-heaps.

There is more than one acceptable place to draw a line.

Sharpening



Sharpening: an acceptable way to draw a sharp line between heaps and non-heaps.

Supervaluation

"That is a heap"

supertrue: true for every sharpening

superfalse: false for every sharpening

Otherwise indeterminate

Supervaluation

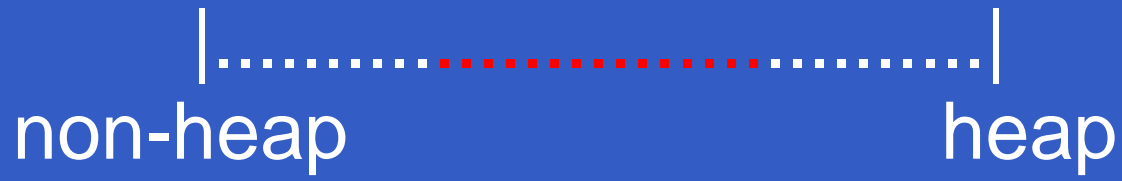
"That is a heap"

true: true for every sharpening

false: false for every sharpening

Otherwise indeterminate

Example



Solving the problem

1,000,000 grains of sand is a heap.

If 1,000,000 grain of sand is a heap,
then 999,999 grains of sand is a heap.

If 999,999 grains of sand is a heap,
then 999,998 grains of sand is a heap.

...

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At least one premise is not true

If x grains of sand is a heap, then $x-1$ grains of sand is a heap.

At least one premise is not true

If x grains of sand is a heap, then $x-1$ grains of sand is a heap.

For every sharpening, at least one of the premises is false.

At least one premise is not true

If x grains of sand is a heap, then $x-1$ grains of sand is a heap.

For every sharpening, at least one of the premises is false.

No sharpening makes all of the premises true.

Not all of the premises are (super>true.

At least one premise is not true

If x grains of sand is a heap, then $x-1$ grains of sand is a heap.

For every sharpening, at least one of the premises is false.

No sharpening makes all of the premises true.

Not all of the premises are (super)true.

The sorites argument is unsound.

First problem with solution

Tolerance: Small differences do not matter

First problem with solution

For some x , x grains of sand is a heap
but $x-1$ grains of sand is not a heap

Second problem

Higher order vagueness