

# SOME REMARKS ABOUT THEORY CHANGE AND TOPIC CONTINUITY

Erich Rast

[erich@snafu.de](mailto:erich@snafu.de)

IFILNOVA Institute of Philosophy,  
New University of Lisbon

Values in Argumentative Discourse (PTDC/MHC-FIL/0521/2014)

MERELY Workshop, July 11-12 2019



*Overview*

*Background*

*Theory Change and Indirect Meaning Characterization*

*Topic Continuity*

*Summary*

## *Topic Continuity: What's the problem?*

### *Strawson's Challenge*

Strawson (1963) vs. explication in Carnap (1950): By replacing one definition of a term with a more precise and fruitful explication, you are changing the topic.

[Cf. similar arguments about talking at cross-purpose by relativist against contextualism of predicate of personal taste.]

## Changes of Meaning

1. **Sharpening** (Ludlow 2014: 87): Making the boundaries of a term sharper. My example: “mountain”: *a large natural elevation of the earth's surface*  $\mapsto$  *a geographic feature rising higher than 1000 feet* (used until 1970)
2. **Narrowing**: Making the meaning more specific. Ludlow (2014: 88): “athlete”: *human or animal*  $\mapsto$  *only humans*
3. **Broadening**: Making the meaning more general. My example: “mind” *in the colloquial sense*  $\mapsto$  *according to extended mind hypothesis*
4. **Shifting**: (Sometimes subtle) shifts in meaning, e.g. changing of prototypical information. “Weib” (ger.): *woman, neutral* (until 17th Century)  $\mapsto$  *woman, pejorative* (since 19th Century)
5. **Replacement**: Substituting one meaning for another meaning. (see next slide)

## *Example of Replacement (Sawyer 2019)*

- ▶ Pseudo-biological notion of **race**: phenotypical differences allegedly tracked and based on genetic differences; used to justify slavery, discrimination, and genocide (e.g. Nazi Germany; Rwanda).
- ▶ Social notion of **race**: “race” denotes different social identities of groups of people; specific instances can be used to point out discriminated groups.

▷ How much of a problem does this pose?

## Positions

- ▶ **SAMESAYING.** Cappelen (2018): Topic continuity is based on coarse-grained equality between extensions, as samesaying arguments show. It is not surprising when continuity fails, since we do not have much control over the change anyway (Lack of Control).
- ▶ **CONCEPTS.** Sawyer (2019): Externalist concepts are needed to explain topic continuity.
- ▶ **MEANING RELATIVISM.** Ludlow (2014: 70): “If what I am saying is right, not only would the truth evaluation be relative to the context of assessment, but in many cases the meaning of an expression would be relative to a context of assessment.”
- ▶ **TRACKING VIEW.** Topic continuity is warranted by operationalizations within the old and the new theory. If not, there is no topic continuity.

In this talk, I argue for the Tracking View.

## Rast (2017ab) on Metalinguistic Disputes

I argued in the past for the following theses:

- ▶ **Semantic Underdetermination**: Many terms, especially evaluative terms, are underdetermined from a truth-conditional perspective. [cf. Ludlow, Bach, and many other moderate and radical contextualists, ...]
- ▶ Two types of meaning:
  - ▶ **Core Meaning**: minimal common denominator, truth-conditionally incomplete, 'loose bundle view', suffices for many communicative tasks, 'everyday language'.
  - ▶ **Noumenal Meaning**: what an expression *really* means, supposed to capture an aspect of reality, made more precise in scientific theories, about reality, social externalism.
- ▶ Metalinguistics disputes concern the adequacy of noumenal meanings on the basis of shared core meaning.

## *Example 1*

### Atom

- i. very small building blocks of matter, come in different kinds
- ii. "Atom, smallest unit into which matter can be divided without the release of electrically charged particles. It also is the smallest unit of matter that has the characteristic properties of a chemical element. As such, the atom is the basic building block of chemistry. Most of the atom is empty space. The rest consists of a positively charged nucleus of protons and neutrons surrounded by a cloud of negatively charged electrons. The nucleus is small and dense . . ." [EB, 2019-6-13]

## *Example 2*

### Torture

- i. intentionally causing severe pain or suffering to extract information or for sadistic fun (+ examples of torture, vivid images, stereotypes from movies)
- ii. "Torture means any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person for such purposes as obtaining from him or a third person information or a confession, punishing him for an act he or a third person has committed or is suspected of having committed, or intimidating or coercing him or a third person, or for any reason based on discrimination of any kind, when such pain or suffering is inflicted by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official capacity. It does not include pain or suffering arising only from, inherent in or incidental to lawful sanctions." [Article 1 of the United Nations Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment]

## *Theories, World Views, Beliefs*

1. For current purposes, theories, world views, and beliefs may be treated on a par, although their modeling would differ in a more realistic setting and is also very theory-dependent.
2. Theories, world views, and beliefs can be local, merely presumed, and we can consider their merits without endorsing them.

## Changing Law-like Statements

Theory 1: Atoms – smallest indivisible building blocks of nature.

Theory 2: Atoms – small building blocks of nature with the characteristic properties of chemical elements.

When theories change, the meaning of theoretical terms may change even without explicit re-definition:

$$\mathcal{M} \models \forall x [C_1^1(x) \rightarrow T(x)] \qquad \mathcal{M} \models \forall x [C_1^2(x) \rightarrow T(x)]$$

⋮

↪

⋮

$$\mathcal{M} \models \forall x [C_n^1(x) \rightarrow T(x)] \qquad \mathcal{M} \models \forall x [C_k^2(x) \rightarrow T(x)]$$

## Indirect Meaning Characterization

All kinds of conditions constrain general terms and predicates.

$$\forall x[C(x) \rightarrow T(x)]$$

$$\forall x[T(x) \rightarrow C(x)]$$

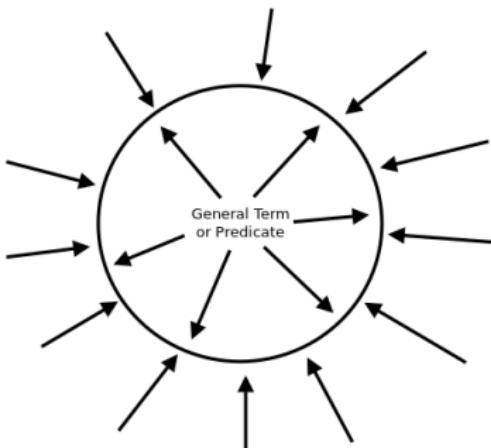
$$\forall x[T(x) \leftrightarrow C(x)]$$

$$\text{Mostly} \forall x[T(x) \rightarrow C(x)]$$

$$\text{Usually} \forall x[T(x) \rightarrow C(x)]$$

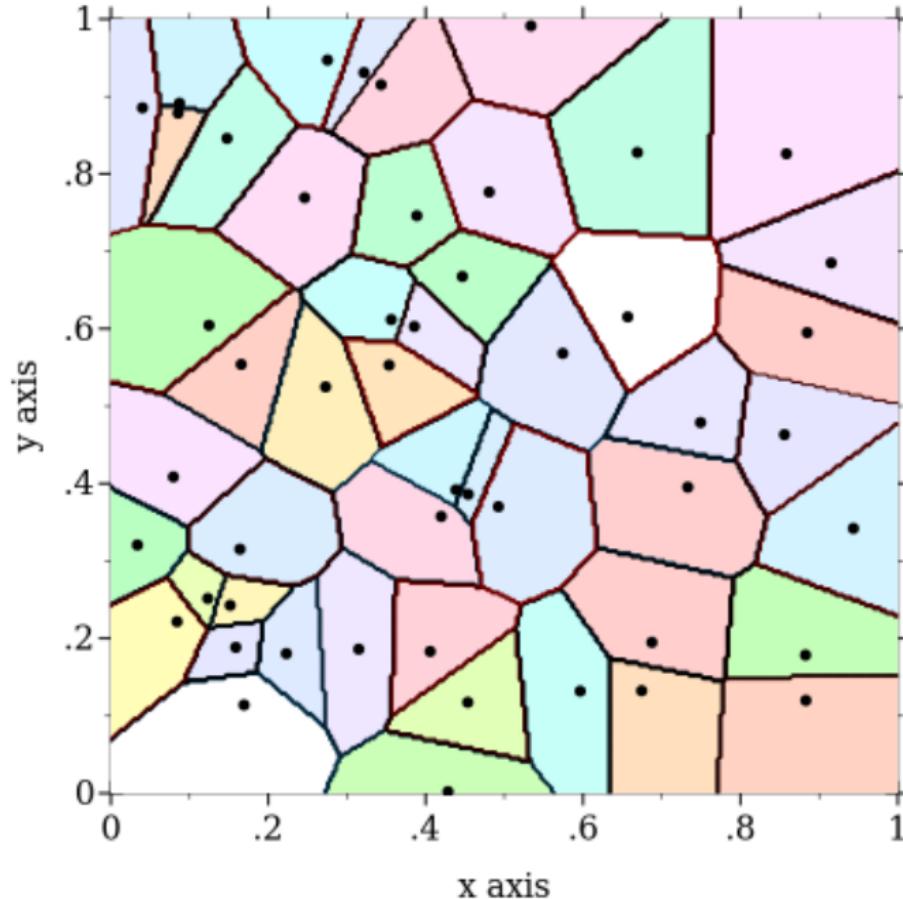
$$\text{Typically} \forall x[T(x) \rightarrow C(x)]$$

⋮

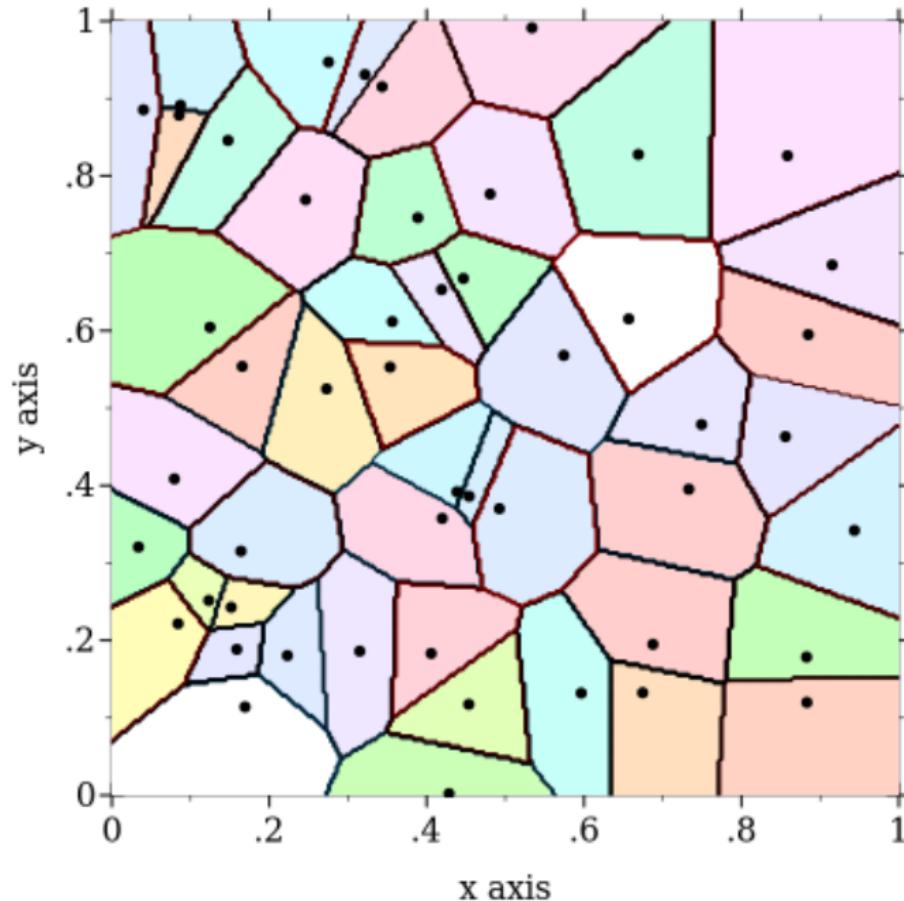


- ▷ Unless an explicit definition is given, any ontology indirectly characterizes the meaning of general terms and predicates in it.

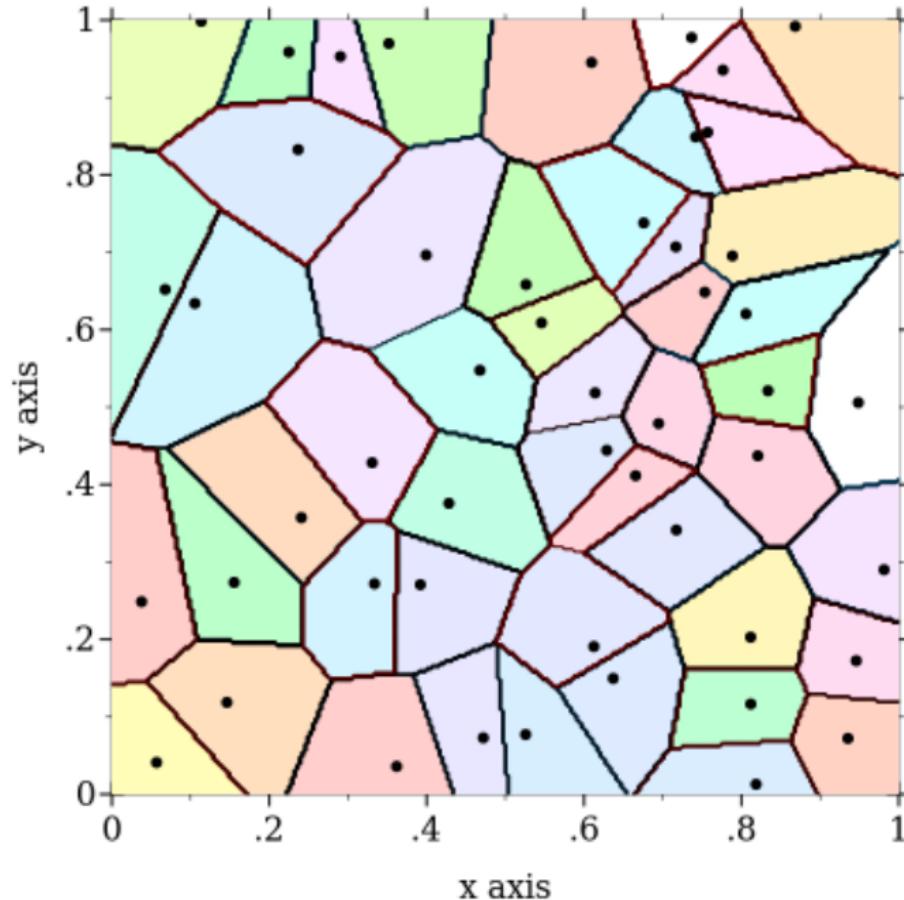
## *Meaning Similarity in Conceptual Spaces*



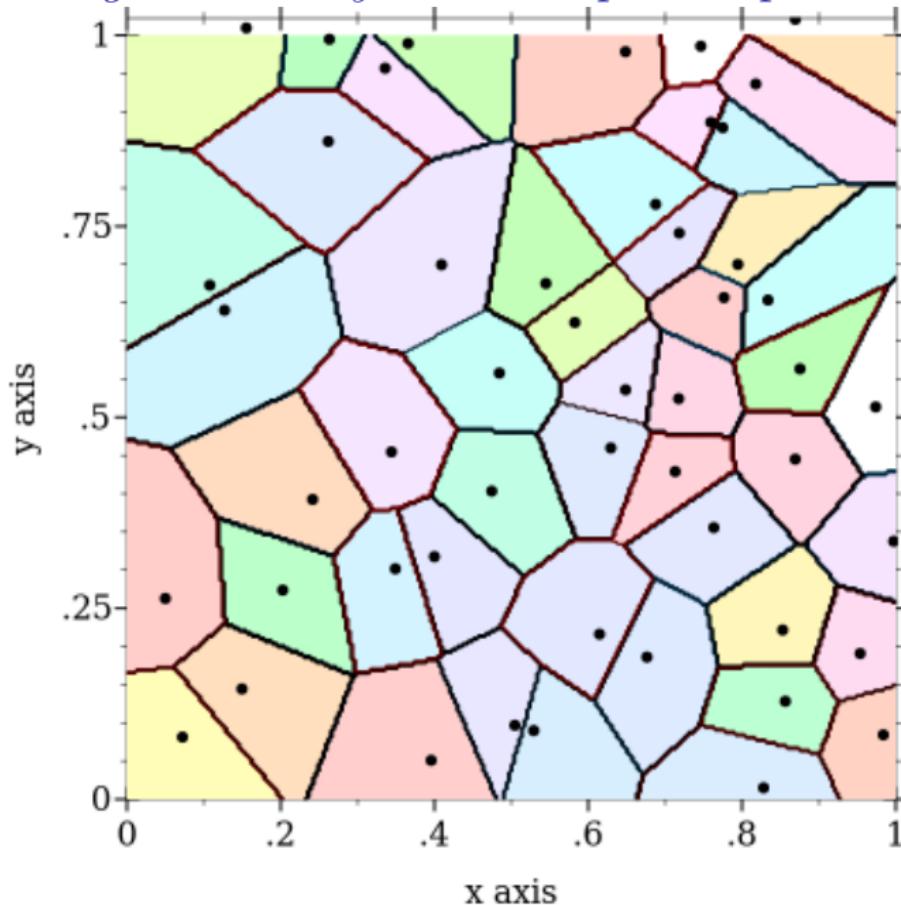
## *Meaning Similarity in Conceptual Spaces*



## *Meaning Similarity in Conceptual Spaces*



## *Meaning Similarity in Conceptual Spaces*



*What Is This?*

Bopamagilvie

## *What Is This?*

Bopamagilvie

- ▶ a wooden plank with an attached wire that forms several loops

## *What Is This?*

### **Bopamagilvie**

- ▶ a wooden plank with an attached wire that forms several loops
- ▶ used for speaking with your invisible spirit companion

## *What Is This?*

### **Bopamagilvie**

- ▶ a wooden plank with an attached wire that forms several loops
- ▶ used for speaking with your invisible spirit companion
- ▶ not strictly needed as a communication device

# What Is This?

## Bopamagilvie

- ▶ a wooden plank with an attached wire that forms several loops
- ▶ used for speaking with your invisible spirit companion
- ▶ not strictly needed as a communication device

Bopamagilvies are a modern remake of an ancient device, with wires instead of dried plant parts. They are used on the Pak Island, Manus Province of Papua New Guinea; 'bopamagilvie' is transcribed from *Pak-Tong* (population: 1090) into English.

# What Is This?

## Bopamagilvie

- ▶ a wooden plank with an attached wire that forms several loops
- ▶ used for speaking with your invisible spirit companion
- ▶ not strictly needed as a communication device

Bopamagilvies are fictional devices from the science fiction novel *The Space Willies* (1958) by Eric Frank Russell, also published as *Plus X* (1956) and *Next of Kin* (1959). An imprisoned spaceship pilot creates them, but the whole story about spirit companions is a lie to allow him to escape.

## What Is This?

### Bopamagilvie

- ▶ a wooden plank with an attached wire that forms several loops
- ▶ used for speaking with your invisible spirit companion
- ▶ not strictly needed as a communication device

Bopamagilvies are fictional devices from the science fiction novel *The Space Willies* (1958) by Eric Frank Russell, also published as *Plus X* (1956) and *Next of Kin* (1959). An imprisoned spaceship pilot creates them, but the whole story about spirit companions is a lie to allow him to escape.

- ▷ Speakers can keep track of theories and other people's world views and beliefs without necessarily endorsing them.

*[This is one of the issues that complicate a more realistic modeling.]*

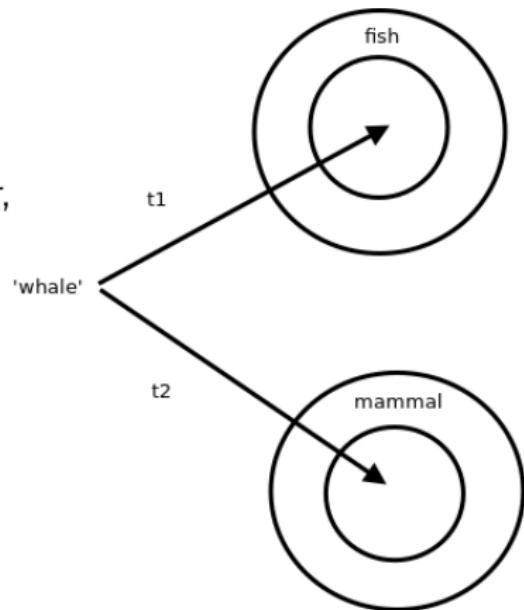
## Metalinguistic Disagreement Is Usually Substantive

1. If constraints indirectly characterize the meaning of not explicitly defined general terms of a theory or world view, then every substantive disagreement on the basis of two different theories or world views is *also* metalinguistic.
2. But the converse is also true: If there is an explicit metalinguistic disagreement, then it is based on two different theories (insofar as it is rational).
3. You can never just disagree about two terms, the disagreement must be justified, cohere with other notions and statements. By disagreeing, you advocate a theory, set of beliefs, or world view.

▷ If there is disagreement, then it is usually substantive.

# SAMESAYING 1

- ▶ A coarse-grained comparison of extensions *or* intensions might work for non-drastic cases of *broadening*, *sharpening*, *shifting*, and *narrowing*.
- ▶ It seems inadequate for hefty changes of the above kinds and for *replacement*.
- ▶ Cappelen suggests samesaying arguments (e.g. in indirect speech reports).



## SAMESAYING 2

- ▶ Cappelen (2018): “Sameness of topic doesn’t track sameness of extension.”
- ▶ However, samesaying arguments merely restate that topic continuity is possible without explaining how.
- ▶ Rough equality of extensions does not work for drastic shifts and replacement.
- ▶ Non-natural kind general terms like “freedom” and “marriage” seem to be particularly problematic.
- ▶ More general critique: From the intuition that people say the same it does not follow that people say the same.
- ▶ Is topic continuity merely stipulated, on the basis of the lexical item?

▷ Samesaying arguments do not provide a satisfying explanation of topic continuity.

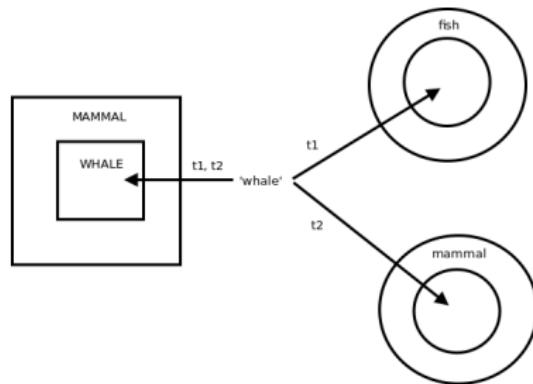
# CONCEPTS 1

Saywer (2018, 2019): Externalist concepts are needed for explaining shifts of meaning while the subject matter remains the same. Examples: “whale”, “atom”, “consent”, “rape.”

- ▶ “whale” at  $t_1$ : concept WHALE,  $\llbracket \text{whale} \rrbracket \subset \llbracket \text{fish} \rrbracket$
- ▶ “whale” at  $t_2$ : concept WHALE,  $\llbracket \text{whale} \rrbracket \subset \llbracket \text{mammal} \rrbracket$

## CONCEPTS 2

The topic is WHALE, remaining constant. In Sawyer's view, concepts are partly externally individuated, e.g. "... the term whale expresses the concept whale in the actual world both at  $t_1$  and at  $t_2$  in virtue of the fact that the linguistic community at  $t_1$  and the linguistic community at  $t_2$  both stand in the requisite relation to whales." (Sawyer 2018: 10)



- ▷ Entities are duplicated. We now have a 'concept-language' and public language.

# MEANING RELATIVISM 1

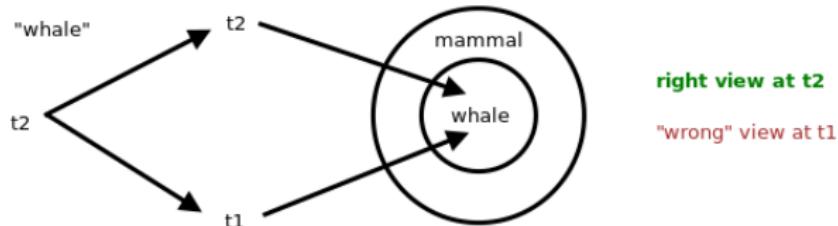
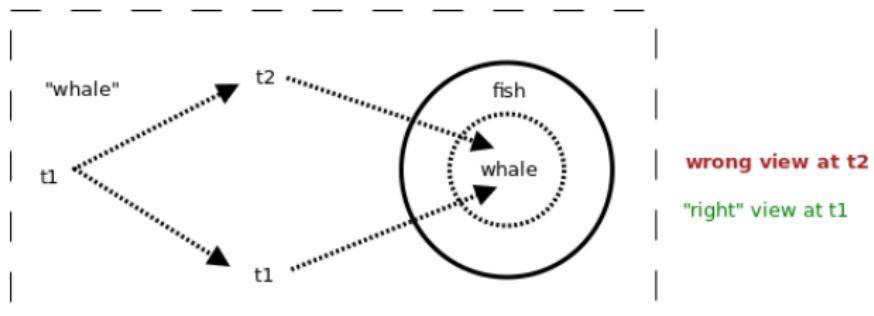
- ▶ “whale” at  $t_1$  assessed at  $t_1$ :

$$[\![\text{whale}]\!](t_1)(t_1) \subset [\![\text{fish}]\!](t_1)(t_1)$$

- ▶ “whale” at  $t_1$  assessed at  $t_2$ :

$$[\![\text{whale}]\!](t_2)(t_1) \subset [\![\text{mammal}]\!](t_2)(t_1)$$

# MEANING RELATIVISM 2



▷ There is only continuity from the perspective of  $t_2$ , but no continuity between  $t_1$  and  $t_2$ . Does this suffice?

# TRACKING 1

## *Tracking*

A general term or predicate  $P$  is tracked in theory  $A$  by  $\alpha$  iff. there is an operational term or operationalization  $\alpha$  in  $A$  that can be used to empirically determine whether an entity is likely  $P$  or is likely a  $P$ -er, including potential measurement errors, uncertainties, and without necessarily making  $\alpha$  part of what it means to be  $P$ .

# TRACKING 1

## *Tracking*

A general term or predicate  $P$  is tracked in theory  $A$  by  $\alpha$  iff. there is an operational term or operationalization  $\alpha$  in  $A$  that can be used to empirically determine whether an entity is likely  $P$  or is likely a  $P$ -er, including potential measurement errors, uncertainties, and without necessarily making  $\alpha$  part of what it means to be  $P$ .

- ▶ If there is no tracking, then there is no topic continuity.

# TRACKING 1

## *Tracking*

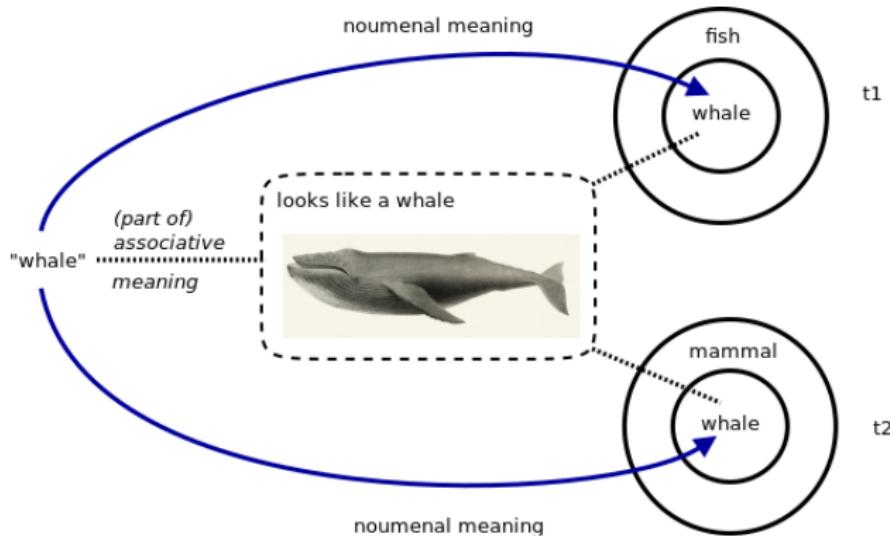
A general term or predicate  $P$  is tracked in theory  $A$  by  $\alpha$  iff. there is an operational term or operationalization  $\alpha$  in  $A$  that can be used to empirically determine whether an entity is likely  $P$  or is likely a  $P$ -er, including potential measurement errors, uncertainties, and without necessarily making  $\alpha$  part of what it means to be  $P$ .

- ▶ If there is no tracking, then there is no topic continuity.
- ▶ Often there is tracking even in case of meaning replacement.

## TRACKING 2

- ▶ Whale: fish-like creature that looks such-and-such
- ▶ Atom: measurable quantities in chemical experiments, mass spectrograms, etc.
- ▶ Light: visible in various colors, has various wavelengths, decomposable in prisms, double slit experiments, etc.
- ▶ Gender: bearing certain (stereo-)typical physical traits of 'man' or 'woman'
- ▶ Race: phenotypical race stereotypes plus (possibly) some self-identification as belonging to that race

## TRACKING 3



Leech (1969, 1985) uses *associative meaning* as an umbrella term for various types of cognitive meaning like social meaning, affective meaning, and collocations. He distinguishes it from *conceptual meaning*.

## *Core Meaning*

- ▶ Core meaning is associative meaning in Leech's sense: Meaning that is commonly associated with a term in certain contexts within a speaker community.
- ▶ 'Empirical' terms often track their topic by core meaning:
  - ▶ Whale: looks like a whale
  - ▶ Duck: looks and quacks like a duck
  - ▶ Gender: looks like a woman or man; self-identification
  - ▶ Race: (fairly arbitrary) clusterings of properties based on skin color, eyes, face, body shapes; self-identification
  - ▶ Light: illuminates the world, shines through glass, etc.

## *Is Core Meaning Needed?*

- ▶ The answer seems to be No, neither as a necessary condition nor for explanation.
- ▶ Remember, we're talking about theories and world views.
- ▶ Other terms may track abstract objects or properties denoted by theoretical terms.
  - ▶ Time is measured by clocks. Clocks do not define the meaning of 'time.'
  - ▶ Mass is measured by scales. Scales do not define the meaning of 'mass.' (If at all, they define weight.)
- ▶ Family, marriage, freedom, athlete: These might be based on a cluster of associated ways of determining whether something is a family, a marriage, an example of freedom, an athlete, etc.

## *Back to Strawson's Challenge*

- ▶ Suppose there is a general term in theories A and B that is not tracked by an operational term.

## *Back to Strawson's Challenge*

- ▶ Suppose there is a general term in theories A and B that is not tracked by an operational term.
- ▶ Does that mean that  $A \mapsto B$  becomes pointless, because the topic has changed?

## *Back to Strawson's Challenge*

- ▶ Suppose there is a general term in theories A and B that is not tracked by an operational term.
- ▶ Does that mean that  $A \mapsto B$  becomes pointless, because the topic has changed?
- ▶ Of course not! According to theory virtues,  $B$  might still be the better theory than  $A$ .

## *What About Amelioration?*

- ▶ Semantic ameliorative projects concern (partially) socially constructed entities (Haslanger 2012).

## *What About Amelioration?*

- ▶ Semantic ameliorative projects concern (partially) socially constructed entities (Haslanger 2012).
- ▶ Semantic amelioration is **not** an analysis of ordinary discourse (core meaning), it is revisionary.

## *What About Amelioration?*

- ▶ Semantic ameliorative projects concern (partially) socially constructed entities (Haslanger 2012).
- ▶ Semantic amelioration is **not** an analysis of ordinary discourse (core meaning), it is revisionary.
- ▶ Classical theory virtues generally apply to both epistemic and semantic amelioration, because it has a descriptive component.

## *What About Amelioration?*

- ▶ Semantic ameliorative projects concern (partially) socially constructed entities (Haslanger 2012).
- ▶ Semantic amelioration is **not** an analysis of ordinary discourse (core meaning), it is revisionary.
- ▶ Classical theory virtues generally apply to both epistemic and semantic amelioration, because it has a descriptive component.
- ▶ In addition, amelioration is based on prudential and normative practical reasoning about the consequences of theory adoption.

## *What About Amelioration?*

- ▶ Semantic ameliorative projects concern (partially) socially constructed entities (Haslanger 2012).
- ▶ Semantic amelioration is **not** an analysis of ordinary discourse (core meaning), it is revisionary.
- ▶ Classical theory virtues generally apply to both epistemic and semantic amelioration, because it has a descriptive component.
- ▶ In addition, amelioration is based on prudential and normative practical reasoning about the consequences of theory adoption.
- ▶ As long as epistemic virtues and practical merits are not confused, there is no problem with changing society by changing language.

## What About Amelioration?

- ▶ Semantic ameliorative projects concern (partially) socially constructed entities (Haslanger 2012).
- ▶ Semantic amelioration is **not** an analysis of ordinary discourse (core meaning), it is revisionary.
- ▶ Classical theory virtues generally apply to both epistemic and semantic amelioration, because it has a descriptive component.
- ▶ In addition, amelioration is based on prudential and normative practical reasoning about the consequences of theory adoption.
- ▶ As long as epistemic virtues and practical merits are not confused, there is no problem with changing society by changing language.
- ▶ Topic continuity is not needed.

## *Summary & Conclusions*

## *Summary & Conclusions*

- ▶ Metalinguistic disputes based on implicit meaning characterizations are usually substantive.

## *Summary & Conclusions*

- ▶ Metalinguistic disputes based on implicit meaning characterizations are usually substantive.
- ▶ Operational terms help keeping track of meaning changes of theoretical terms. ('tracking view')

## *Summary & Conclusions*

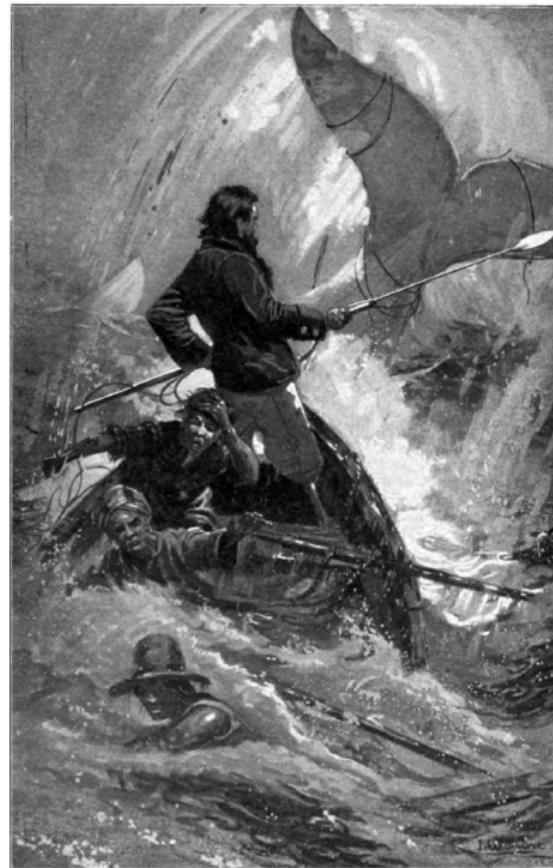
- ▶ Metalinguistic disputes based on implicit meaning characterizations are usually substantive.
- ▶ Operational terms help keeping track of meaning changes of theoretical terms. ('tracking view')
- ▶ Topic continuity is not needed to justify ameliorative projects.

## *Summary & Conclusions*

- ▶ Metalinguistic disputes based on implicit meaning characterizations are usually substantive.
- ▶ Operational terms help keeping track of meaning changes of theoretical terms. ('tracking view')
- ▶ Topic continuity is not needed to justify ameliorative projects.
- ▶ Broader conclusion: Conceptual Engineering takes the wrong perspective.

## *Summary & Conclusions*

- ▶ Metalinguistic disputes based on implicit meaning characterizations are usually substantive.
- ▶ Operational terms help keeping track of meaning changes of theoretical terms. ('tracking view')
- ▶ Topic continuity is not needed to justify ameliorative projects.
- ▶ Broader conclusion: Conceptual Engineering takes the wrong perspective.
- ▶ Genuine disagreement is *always* about theories and world views, and may be based on epistemic, prudential and normative arguments.



## References

- ▶ Cappelen, H. (2018): *Fixing Language*. Oxford UP.
- ▶ Carnap, R. (1950): *Logical Foundations of Probability*, Chicago UP.
- ▶ Haslanger, S. (2012): *Resisting Reality*. Oxford UP.
- ▶ Leech, G. (1985): *Semantics*. Penguin Classics. (2nd ed.)
- ▶ Ludlow, P. (2014): *Living Words*. Oxford UP.
- ▶ Rast, E. (2017): Value Disagreement and Two Aspects of Meaning. *Croatian Journal of Philosophy*, Vol. 17 No. 51(3): 399-430.
- ▶ Sawyer, S. (2019): The Role of Concepts in Fixing Language. Forthcoming in *Canadian Journal of Philosophy*.
- ▶ Sawyer, S. (2018): The Importance of Concepts. *Proceedings of the Aristotelian Society* 118 (2): 127-147.
- ▶ Strawson, P. F. (1963): Carnap's views on constructed systems versus natural languages in analytic philosophy. In Schilpp, P. (ed.): *The Philosophy of Rudolf Carnap*: 503-518. Open Court.

## *When Is a Dispute Merely Verbal?*

*A dispute about term  $T$  on the basis of theories  $A$  and  $B$  is **merely verbal** if*

- ▶  $T$  is tracked by an operationalization in  $A$  and  $B$ .
- ▶  $A$  and  $B$  are compatible with each other if  $T$  is renamed to  $T_A$  and  $T_B$ .

*or if*

- ▶  $T$  has different explicit definitions in  $A$  and  $B$ .
- ▶  $A$  and  $B$  are compatible with each other if  $T$  is renamed to  $T_A$  and  $T_B$ .

## Modeling Theory Change

Different ways of looking at theory change:

1. Change sets of formulas  $T \mapsto T'$  that constitute the theory, or corresponding semantic objects, within language  $\mathcal{L}$  in model  $\mathcal{M}$ : belief revision, belief base revision, epistemic modal logics.
2. Update the models  $\mathcal{M} \mapsto \mathcal{M}'$  for  $\mathcal{L}$ : dynamic modal logics, e.g. dynamic epistemic logic.
3. Change language and models  $(\mathcal{M}, \mathcal{L}) \mapsto (\mathcal{M}', \mathcal{L}')$ .
4. Change theory, language, models:  $(T, \mathcal{M}, \mathcal{L}) \mapsto (T', \mathcal{M}', \mathcal{L}')$ .

▷ Less expressivity is better! 3 and 4 are too expressive for most purposes. 1 and 2 are more fruitful.