THEORIES OF SIGNIFICATION & THE NON-PHYSICALITY OF REFERENCE

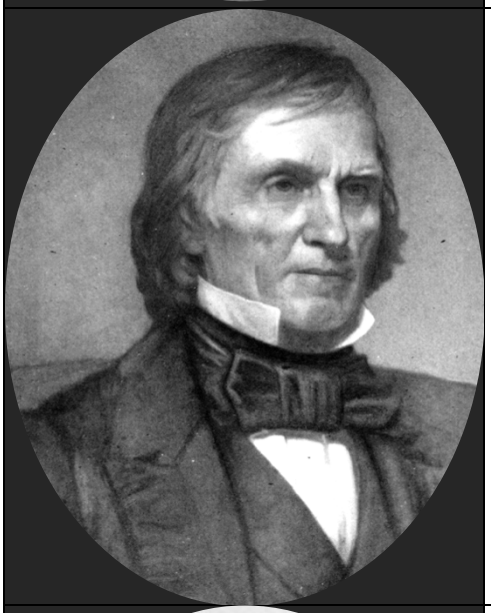
Congratulations to Hartry

Thanks to organizers

Plan of presentation:

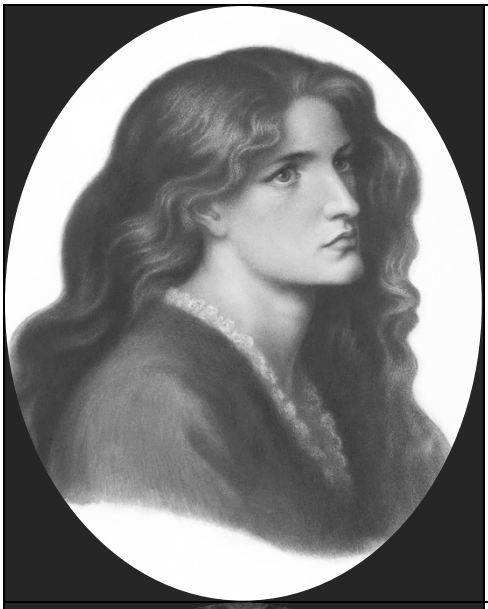
- four 19th century theories of signification *as background for*
- Tarski's "Concept of Truth" (1936) *as background for*
- Field's "Tarski's Theory of Truth" (1972)
- and continuing relevance of the question of the physicality of reference

SEMASIOLOGIE
new coinage
for addition to etymology, syntax
[Christian] Karl Reisig
1772-1848
German
classical philologist



SEMASIOLOGY
from Semasiologie
as in German school
Josiah Gibbs (Josiah Willard Gibbs Sr)
1790-1861
American
philologist, abolitionist

SÉMANTIQUE
new coinage
for revival of semasiology
Michel Bréal
1832-1915
French
philologist, inventor of marathon —
dreyfusard



SEMANTICS
from sémantique
as in Bréal's 1883 pilot paper
Edith Griffith-Boscawen née Williams
1851-1919
English
language-teacher, translator

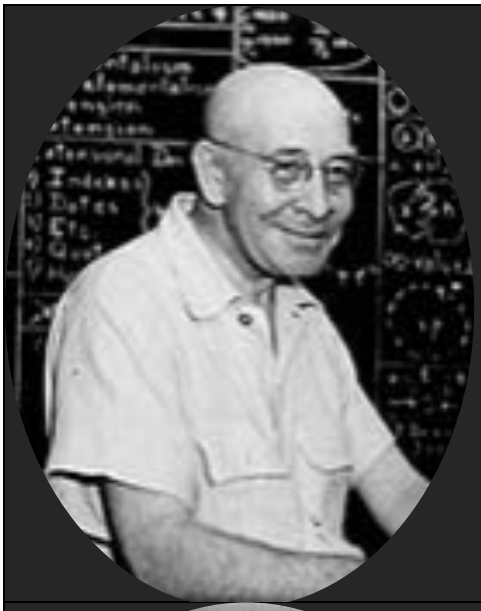
SEMANTICS
from sémantique
as in Bréal's 1897 magnum opus
Emmeline "Nina" Cust née Welby
1867-1955
English
sculptor, translator

SEM[E]IOTIC[S]
new coinage
used all four spellings
C. S. Peirce
1839-1914
American
philosopher, logician, polymath, eccentric

SÉMIOLOGIE
from semiotics
as in Peirce
Ferdinand de Saussure
1857-1913
Swiss, *brought to Paris by Bréal*
structural linguist

SIGNIFICS
new coinage
correspondent of Peirce, mother of Cust
Victoria, Lady Welby-Gregory
1837-1912
English
autodidact polymath, independent scholar

SIGNIFICA
from significs
as in Welby
Gerrit Mannoury
1867-1956
Dutch
philosopher, intuitionist mathematician



"GENERAL SEMANTICS"
"NON-ARISTOTELIAN SYSTEMS"
Alfred Korzybski
1879-1950
Polish-American
fringe scholar
cult figure

SEMIOTICS
SYNTACTICS / SEMANTICS / PRAGMATICS
Charles W. Morris
1901-1979
American
philosopher
unity-of-science movement

SEMANTYKA / SEMANTIK / SEMANTICS
"SEMANTIC CONCEPTION OF TRUTH"
Alfred Tarski né Tajtelbaum/Teitelbaum
1901(?)-1983
Polish-American
mathematician & logician
"something of a philosopher"

DICHOTOMIES AMONG THESE THEORIES WHICH SIDE IS TARSKI ON?

- LANGUAGE vs COMMUNICATION
  - focused, excluding non-verbal human & animal signaling vs
  - ambitious, including non-verbal human & animal signaling
  - "semasiology" & "semantics" vs "significs" & "semiotics"
  - Tarski calls his view "semantic"
- SYNCHRONIC vs DIACHRONIC
  - present state, usage vs historical changes, etymology
  - 20^{th} c linguistics (mostly) vs 19^{th} c philology (mostly)
  - Saussure transitional figure
  - Tarski well past transition
- EXTENSIONAL vs INTENSIONAL
  - in Mill: signification = denotation + connotation
  - in Frege: Bedeutung vs Sinn (reference vs sense)
  - Bréal's key "semantic" concepts were meaning-related
    - *synonymy*, *ambiguity* (*homonymy* and *polysemy*), *antonymy*
  - Tarski's key "semantic" concepts are truth-related
    - *truth, satisfaction, denotation/reference*, *definability*
  - how shift of sense occurred is an unsolved historical problem
- IMMANENT vs TRANSCENDENT
  - (Quine's terminology)
  - notions defined for "home" language L_0 vs
  - notions defined for variable language L
  - Tarski assumes "object language" contained in "metalanguage"
  - *more precisely* (per Hodges in SEP)
  - Tarski at home in several languages, so real translation issue is
    - unproblematic: sizable bilingual community, stable practice vs
    - radical: interpreting speech of previously uncontacted group
  - Tarski assumes "a copy" (unproblematic translation)
    - of object language contained in metalanguage

QUINE vs CARNAP ON ANALYTICITY/SYNTHETIC

Case study of how such dichotomies are involved in a controversy

CARNAP

Setting up a physical theory, e.g. electromagnetic

of certain objects, e.g. subatomic particles

- distinguish one- and two- (or more-) place predicates

  positive, negative, electron, proton, attract, repel

- formulate substantive postulates in these terms

  electrons are negative

  negative particles repel each other, positive particles repel each other

  negative and positive attract each other

- derive further laws as theorems from these

  electrons repel each other

But also may want abbreviations, so

- introduce auxiliary predicates and definitions / meaning postulates

  a particle is charged iff it is positive or negative

- deduce various further theorems in new vocabulary

  electrons are charged

  charged particles attract or repel each other

- distinguish theorems that use only meaning postulates from others

  i.e. distinguish analytic from synthetic

QUINE

(i) Carnap's approach too synchronic

Distinction of substantive physical postulates/
stipulative abbreviative definitions may be ephemeral, transitory:
what start as "definitions" may be revised like other "laws"
(e.g. momentum in classical vs relativistic mechanics
p = mv and conservation of momentum)

(ii) Carnap's approach is too immanent

Defines analyticity language-by-language
rather than "S is analytic in L" for variable L
— core of Field's critique of Tarski will be not dissimilar

TARSKI'S MATHEMATICAL MOTIVATION

before he developed philosophical ambitions or pretensions

DEFINABILITY WIDELY REJECTED AS NON-MATHEMATICAL

Truth was involved paradox since antiquity (Epimenides)

Truth-*related* notions were involved in pardoxes circa 1900

Grelling (satisfaction), Berry & Richard (definability)

König (definability used in "refutation" of Zermelo)

Definability as criterion of mathematical existence

required by anti-choice Paris school Lebesgue, Borel, Baire

dismissed as "psychology, not mathematics" by pro-choice Hadamard

Peano "*non pertine ad mathematica, sed ad linguistica*"

DEFINABILITY HAS MATHEMATICAL APPLICATIONS

Tarski-Kuratowski algorithm (first publication on the subject)

relates topological complexity of sets of real numbers to

logical complexity of their definitions

e.g. complement, intersection, union, *and* projection

correspond to negation, conjunction, disjunction,

and existential quantification

Made tools of modern logic applicable to

"descriptive" (i.e. topological as opposed to metric) theory

of sets of linear or planar points (real or complex numbers)

To make this work respectable, need an account that would be

"formally correct" (give orthodox mathematical definition —

for modern, set-theoretic mathematics as pursued in Poland)

"materially adequate" (have intuitively desired properties)

Other notions reduce to notion

formula with n free variables Fxyz…

is satisfied by an n-tuple of objects bcd…

- *Truth* is the special case n = 0
- *Definable* set is one of from {*b*: *b* satisfies Fx} for some condition Fx
- *Definable* object b is one whose unit set {b} is definable
- "The x such that Fx" denotes b iff b alone satisfies Fx

TARSKIAN TRUTH DEFINITION

Emphasizes his "definition" not an attempt to analyze "meaning" of truth
(which would be an absurd thing to claim,
given set-theoretic apparatus involved)

Focus on famous T-schema or disquotation principle
"P" is true iff P
"Fx" is true of b iff Fb
"Fxy" is true of b, c iff Fbc …

N.B. in the mathematical case, can safely ignore indexicality
(otherwise "is true" would have to undo *indirect* vs *direct* quotation)

Unrestricted use of the scheme would result in liar paradox
Tarski will deal with a restricted kind of language

Does Tarski implicitly take the T-scheme to give the *meaning* of "true"?
He is coy or cagey, but this would explain

(i) passing remark on inconsistency of natural language
which seems to presuppose meanings are given by rules
some of which might be such as to be in conflict with themselves

(ii) taking of T-scheme as criterion of "material adequacy"
or coextensiveness with intuitive notion for his restricted language

Nature of restricted language

- some domain of objects, as universe of discourse (range of variables)
  e.g. real numbers
  in theoretical discussions often takes universe of *all* objects
  (like foundational studies of Frege and Russell)
  vs mathematical applications
  (like "model theory" of Tarski & Vaught)
- some primitive predicates,
  e.g. "the sum of x and y is z"
  (we will not need full regalia of constants, function-symbols, terms)

Formulas built up from these using (the usual) logical operators
(including first- or higher-order quantification)

TARSKIAN TRUTH DEFINITION, *CONTINUED*

RECURSIVE CHARACTERIZATION: MATERIAL ADEQUACY

- Instances of T-scheme for each predicate, e.g.
  "the sum of x and y is z" is true of a triple of real numbers iff the sum of the first and the second is the third
- Compositional clauses for each logical operator, e.g.
  a conjunction is true iff both conjuncts are true

N.B. derivation of these from T-scheme would require parametric use of T-scheme for sentence-placeholders and not just sentences

"yadda yadda yadda and blah blah blah" is true iff
yadda yadda yadda and blah blah blah

"yadda yadda yadda" is true iff yadda yadda yadda

"blah blah blah" is true iff blah blah blah

Hence, "yadda yadda yadda and blah blah blah" is true iff
"yadda yadda yadda" is true and "blah blah blah" is true

Clauses for primitive predicates and clauses for logical operators determine truth-conditions for all formulas of restricted language just as recursion equations for zero and successor case

$x + 0 = x$ $\quad\quad$ $x + Sy = S(x + y)$

determine value of sum for all natural numbers

Can derive instance of T-scheme for every sentence, e.g.
"for all x,y the sum of x and y equals the sum of y and x" is true iff for all x,y the sum of x and y equals the sum of y and x

EXPLICIT DEFINITION: FORMAL CORRECTNESS

Want direct, explicit definition permitting elimination of "true":

Dedekind *Was sind und was sollen die Zahlen?* developed a way to turn any recursive characterization into direct, explicit definition — using set-theoretic apparatus

So truth attributions involve apparatus *not* in the formal object language (1^{st}-order truth 2^{nd}-order definable, 2^{nd}-order truth 3^{rd}-order definable, …) that is why we cannot claim definition captures pre-theoretic sense and why we do not get the liar paradox.

DAVIDSONIANISM* vs TARSKIANISM

A large, very influential departure from Tarski

"DAVIDSON PROGRAM"

in the sense of an EXTENSION of Tarski

extend Tarski's definition to cover more grammatical forms vs

not to be confused with…

"TRUTH-CONDITIONAL SEMANTICS"

in the sense of an INVERSION of Tarski

- Does NOT take truth as a notion needing rehabilitation of reputation

  no concern over "formal correctness", set-theoretic definition

  no concern over paradoxes
- Does NOT take primitive predicates, logical operators as understood
- DOES take truth to be a primitive, presumed unproblematic, notion

  possession of which is prerequisite for all language-learning
- DOES take recursion clauses as explaining meaning of predicates

  & composition clauses as explaining meaning of logical operators

  no concern over circularity

  [items found on both sides of definition]

  no concern over Achilles-Tortoise problem for logical operators

  [*rules for logical operators cannot be justified by truth-conditions without already having some rules to use in justificatory argument*]

*Will not consider how much of "Davidsonianism" is in Donald Davidson

DISQUOTATIONAL THEORY OF TRUTH

A smaller, less influential departure from Tarski

one species of the genus "deflationary" theory of truth

makes the notion of truth "quasi-logical":
NON-physical BUT NOT META-physical
takes T-schema as a rule giving the meaning of "true"
(as we said may be implicit in Tarski,
moved from background to foreground)

The use of the truth-predicate is NOT

to connote some substantive relation (physical or other)
between language and the extralinguistic world
—so no substantive analysis of a property
all truths have in common is sought or thought needed
(this is what is common to the genus "deflationary":
no interest in traditional correspondence, coherence, pragmatic)

The use of the truth-predicate IS for intralinguistic functions:

- expression of agreement without repetition
("that's true")
- formulation of generalizations (declarative or imperative)
that otherwise could not be said but only shown by examples
+ etc

(this is what is pecular to disquotationalist species)

Tarski shows this is mathematically respectable for restricted languages

Disquotationalism not so interested in mathematical respectability,

not limited to restricted languages
(includes the inconsistency theory)

DUMMETT'S CRITICISM OF DISQUOTATIONALISM

A criticism of disquotationalism to which Field seems sympathetic,
    though it is not his MAIN criticism

E.g. Norm of truthfulness: Don't say what isn't true

per deflationism: a social rule we need truth-notion to state:
    Don't say "the cat is on the mat" if the cat is not on the mat
    Don't say "the frog is on the log" if the frog is not on the log
    Don't say "the goose is on the loose" if the goose is not on the loose
    + etc

per Dummett truth itself is normative: "what assertion aims at"
    — bears not only against Strawson, but also Quine, and even Tarski

N.B. if notion of truth has a normative component then
    given Hume's gap between "is" and "ought"
    and value-freedom of physical science
    any physicalistic analysis would seem to be precluded

FIELD'S (MAIN) CRITICISM OF TARSKI

Tarski's definition presupposes "primitive reference"

i.e. understanding of primitive predicates of language

in other words: Tarski's definition of truth is immanent

(like Carnap's definition of analyticity per Quine)

Hence applies to foreign languages only insofar as translated into ours

makes transcendent truth as indeterminate as translation,

whereas we want or need an explicit analysis in physicalistic terms

(though not necessarily Skinnerian behavioristic terms)

<u>in 1972</u> seems to be tending towards conclusion that

disquotational truth is illegitimate

<u>post-1972</u> instead suggests it may be legitimate as far as it goes

but something more may be needed for certain aims

<u>eventually</u> indicates nothing more needed for at least one important aim:

epistemological argument for nominalism:

given the causal inertness of mathematical objects,

correlation between mathematicians' beliefs and truth is inexplicable

FIELD ON KRIPKE

I will not attempt to any account of the post-1972 views on
deflationary truth, let alone on paradoxes
— back to "Field on Tarski on Truth" (vs "Field on Truth")
with focus now not on satisfaction but denotation/reference

Field uses the expression "causal theory" in connection with Kripke

N.B. a "causal theory" would not be a "physical theory"
since causation is not a concept of modern physical science
but of stone-age metaphysics (Russell)

Kripke does not say "causal" but "chain of communication"
does not say account is a "theory" but a "picture"

Most of what Kripke says outside scope of Field's discussion
BUT Field recognizes that Kripke DOES recognize problem cases &
does NOT pretend to offer any general physicalistic theory
or other reductive analysis (like Devitt or someone)

So what is the relation between the disquotation theory of reference:
what "N" refers to is N
[if N exists, and nothing otherwise]
and Kripke's account of historical chain:
- initial baptism (by description or ostension)
- speaker-to-speaker transmission (by intent to preserve)

(Perhaps the latter is material towards a theory of *translation*
of idiolects interpersonally and diachronically?)

Negative principle common to all forms of deflationism
(e.g. Brandom on prosententialism)

REFERENCE IS NOT A PHYSICAL RELATION

cf Field's limited main conclusion: at least, Tarski doesn't show it is

Moral? "so much the worse for reference" or
"so much the worse for physicalism"?

Perhaps Field and Kripke differ at this point
— will not pursue doxastic, exegetical issues

Instead, will indicate a question emerging from a convoluted dialectic

MIND-BODY PROBLEM & A POSTERIORI NECESSITY

Dualism: mental (especially sentience vs intentionality,
sensation & affect vs belief & desire)
distinct from physical *with no necessary connection*
hence with possibility of disconnection:
either ghosts (minds without active, living bodies) as per Descartes
or zombies (active, living bodies without minds) as per Chalmers

Physicalism: identity theory vs functionalism
feeling pain is having C-fibers firing
feeling pain is being in a natural internal state
physicalistically characterizable as (typically)
caused by tissue damage & causing avoidance behavior
— a "functional" role realized by having C-fibers firing

Necessarily, a human organism in the state playing the pain-role
is feeling pain

What kind of necessity?
conceptual: *knowable a priori that* couldn't be otherwise
metaphysical: couldn't be otherwise
nomic: couldn't be otherwise *without violation of law of nature*

Debate over metaphysical necessity most interesting when
dualist concedes [psychophysical] nomic necessity
physicalist concedes conceptual non-necessity
dualist asks: how do you get from nomic to metaphysical []?
physicalist asks: how do you get from conceptual to metaphysical ◊?

Background issue:
how do we explain Kripkean examples of a posteriori necessity?
would this apply to pain/C-fiber case if accepted as an example?

One proposal about Kripkean examples:
they are conceptually necessary consequences of
fundamental physical facts (known only a posteriori or not at all)
(*something like* this has been *discussed* by Chalmers and Jackson
in their distinctive "two-dimensionalist" frameworks)

A POSTERIORI NECESSITY & APHYSICALITY OF REFERENCE

Argument 1

(1a) The element with atomic number 50 was
the second ingredient of the most common alloy
produced on the surface of this planet circa 3K-5K BP

(1b) Tin was the second ingredient of the most common alloy
produced on the surface of this planet circa 3K-5K BP

Hence Tin has atomic number 50

Argument 2

(2a) "Tin" denotes the element with atomic number 50

(2b) "Tin" [as used by me, here, now] denotes tin.

Hence Tin has atomic number 50

(1a) is true (bronze = copper + tin, bronze age ≈ 3300-1200 BCE)
and is fundamental physics if we allow ourselves to include

- general laws
- particular distribution of matter / energy
- indexical "here" "now"
- notions *inexactly* defined in such terms (e.g. valence, planet, alloy)

(1b) is not conceptually necessary per anti-descriptivist arguments
of *Naming & Necessity* and the literature it cites
e.g. someone ignorant of metallurgy, archaeology
might know only "tin is a whitish metal used in alloys"
which does not distinguish it from zinc (cf. Feynman vs Gell-Man)

(2b) is conceptually necessary per metalinguistic theories
popular since 1972 (e.g. Matushansky)

(2a) is NOT fundamental physics
<u>according to the aphysicality of reference</u>

[dialectic has so many twists and turns it is not clear
in which direction such a conclusion would point
as regards the original dualist-physicalist debate,
hope to address this in a book in preparation *Mentality & Modality*]