Class #12 - Natural Kinds

I. Putnam's Conclusions

Our topic, since starting with Frege's sense/reference distinction, has been how we refer, how language hooks onto the world.
In one sense, we have sharpened our focus to the semantic value of names.
In another sense, our view has widened.
Kripke's arguments about rigid designation lead to some startlingly broad conclusions about necessity and apriority and philosophy of mind.
Putnam's article, like Kripke's has both a narrow focus and broad implications.

Putnam argues for two conclusions.
First, natural kind terms are rigid designators, like names.
Second, what we mean is not exclusively determined by what we think.
Putnam's argument bridges Kripke's insights about rigid designation with what has come to be known as semantic externalism, that the meanings of our terms are, in surprising ways, independent of our thoughts.

II. Burge's Externalism

Tyler Burge developed semantic externalism around the same time as Putnam, especially in an article we are not reading, called "Individualism and the Mental."
Burge asks us to consider two possible worlds, w_1 and w_2.
In w_1, which is relevantly like ours, people speak English$_1$.
One of the English$_1$ speakers, let's call him Tyler$_1$, thinks (mistakenly) that he has arthritis in his thigh.
But arthritis only afflicts joints and the thigh is not a joint.
Tyler$_1$ has a false belief.
He expresses this false belief by uttering the false statement A.

        A   I have arthritis.

In w_2, Tyler$_2$'s personal history and experiences are exactly the same as those of Tyler$_1$.
The only difference between w_1 and w_2 is that in w_2, the word 'arthritis' refers, not to arthritis, but to a different disease, which we can call tharthritis.
Tharthritis is like arthritis but it afflicts both bones and joints.
Tyler$_2$ lacks any beliefs about arthritis.
No one in w_2 has any beliefs about arthritis.
Instead, people in w_2 have beliefs about tharthritis.
They refer to tharthritis by using the word 'arthritis',
So, in w_2, 'I have arthritis' means that one has tharthritis.
Tyler$_2$ thus believes, truly, that he has tharthritis.
He expresses that belief by uttering A, just as Tyler$_1$ did.
But the statement that Tyler$_2$ makes by uttering A is true.

Tyler$_1$ has exactly the same history and experiences as Tyler$_2$.

They express their beliefs about their conditions with the same sentences.
Thus, whether one or the other Tyler has a true belief about tharthritis or a false belief about arthritis depends wholly on matters external to Tyler.
All that matter to whether Tyler's statement is true or false, and to whether his reference is successful or not, are the practices of the linguistic community in which he finds himself.

III. Putnam's Twin Earth

Putnam argues for externalism about natural kinds, specifically water.
He frames the argument in terms of the differences between intension and extension.
'Creature with a heart' and 'creature with a kidney' differ in intension, while having the same extension.
So Putnam an intensionalist of some sort.
We can use the intensionalist's language to describe the Burge case by saying that 'arthritis' has two different extensions while having the same intension.
Putnam observes that the claim that terms with the same intension can have different extensions is unexpected.

> The timeworn example of the two terms 'creature with a kidney' and 'creature with a heart' does show that two terms can have the same extension and have yet differ in intension. But it was taken to be obvious that the reverse is impossible: two terms cannot differ in extension and have the same intension (700).

Frege defined the sense of a name as that which determines its extension: sense determines reference.
Senses of Fregean predicates and sentences also determine their references: general concepts and truth values.
Indeed, we can even avoid invoking modes of presentation in defining senses, for Frege.
The sense of a term (singular, general, or sentence-sized) is, for Frege, whatever it is that the utterer grasps in the act of referring.

In Putnam's Twin Earth case, we are asked, as in Burge's case, to imagine two worlds.
The first world is ours, before chemical analysis, say around 1750.
The second world is called Twin Earth, and it is almost exactly like Earth.
The only difference between Earth and Twin Earth is that where we have H_2O, Twin Earth has XYZ, a completely alien compound, which looks, and tastes, and acts just like water.
Everywhere that we have H_2O, they have XYZ, and vice-versa.
The Twin Earthlings call XYZ water, just as we call H_2O water.

When an Earthling uses the term 'water', s/he is referring to H_2O.
If, somehow, Earthlings were able to manufacture or discover XYZ, we would be wrong to call it water.
Similarly Twin Earthlings use the term 'water' to refer to XYZ.
Thus, 'water' refers-in-English to water (i.e. H_2O).
But 'water' refers-in-Twinglish to twater (i.e. XYZ).
The terms have the same meaning in both languages.
Earthlings and their Twin Earth counterparts (or, dopplegangers) think of themselves as drinking water, swimming in the water, and washing themselves with water.
When they think about 'water' they think the same thoughts.
But, 'water$_E$' and 'water$_{TE}$' have different referents.

Putnam has given us a case where two terms have the same intension but different extensions.

Note that Putnam's conclusion depends on his claim that the term 'water' is rigid.
Just as names were rigid because they referred to the same individual in all possible worlds, Putnam says that natural kind terms, like water, refer to the same thing in all possible worlds.
Just as we rigidly refer directly to named individuals, we rigidly refer to natural kinds.
We pick out an object, say, by pointing at it.
We classify it: an elm tree, some water, gold.
We want to know which other objects are of the same sort.
So, we need a way of judging whether an object is of that type.

Determining the nature of the object is a job for the experts.
But anyone can refer to a type.

> When I say "*this* (liquid) is water," the "this" is, so to speak, a *de re* "this" - i.e., the force of my explanation is that "water" is whatever bears a certain equivalence relation...to the piece of liquid referred to as "this" *in the actual world* (707).

We pick out water by pointing to it, or describing it.
But, when we want to know what water really is, we ask the scientists.
Whatever the experts say determines the reference of our terms, even in other possible worlds.
There is an essence to a natural kind, which is only discoverable within a scientific theory.
Our natural-kind terms refer rigidly, across worlds.
Natural kinds, like names, have hidden indexicals that make them refer rigidly.

> Indexicality extends beyond the *obviously* indexical words and morphemes (e.g., the tenses of verbs). Our theory can be summarized as saying that words like 'water' have an unnoticed indexical component: "water" is stuff that bears a certain similarity relation to the water *around here*. Water at another time or in another place or even in another possible world has to bear the relation *same$_L$* to *our* "water" *in order to be water*. Thus the theory that (1) words have "intensions," which are something like concepts associated with the words by speakers; and (2) intension determines extension - cannot be true of natural-kind words like 'water' for the same reason it cannot be true of obviously indexical words like 'I' (707).

So, 'water' designates rigidly.
And 'H_2O' designates rigidly, as the name of a particular kind of molecule.
Thus, 'water is H_2O', like 'Hesperus is Phosphorus', is necessary, but discovered a posteriori.
It is, in fact, one of the necessary, *a posteriori* theoretical identifications that Kripke discusses.

Terms for artifacts, unlike terms for natural kinds, presumably lack essences, and so lack the indexical quality of natural kinds.
There is no essence to a chair or a shirt that scientists could discover.
Artifacts may be made of varying materials.
They might have some functional essence.
But, the rules governing the uses of artifact terms are likely to be mainly pragmatic.

There are cases which are ambiguous between natural kinds and artifacts.
Elsewhere, Putnam discusses a jadeite/nephrite case.

The term 'jade' refers to two different elements (jadeite and nephrite) with two different microstructures.
'Jade' refers not to a single substance with a single essence.
Similarly, 'autism', and other disease terms, might refer to a range of different essential structures.

In one of Putnam's Twin Earth cases, it is 1750 and no one knows anything about chemical analysis.
No one has any way of knowing that the reference of the term 'water' on Earth and on Twin Earth is different.
Me and my Twin Earth doppleganger have the same thoughts.
So, whatever way we think about 'water' is the same.
Yet, our references are to different substances.
As in the Burge case, the reference of 'water' is determined by factors external to anything to which an individual has access.
I can not know that the reference of my term 'water' is water or twater.

A similar conclusion arises from Putnam's elm/beech case.
Here, what Putnam thinks does not determine that to which he refers.
He associates the same thoughts with either elm trees or beech trees, depending on which word is used.
His 'elm' thoughts and words mean and refer to elm trees.
His 'beech' thoughts and words mean and refer to beech trees.
But, he doesn't know how to distinguish elms from beeches.
Thus, his thoughts, our thoughts, do not determine the meanings or references of our terms.

IV. The Division of Linguistic Labor

Consider how far we have come from Locke's thesis that words stand for ideas in our minds.
Locke claimed that communication was only possible, in fact society was only possible, because the meanings (the referents!) of my words were my thoughts.
Frege divided our grasp of a sense (internal) from the reference it determines (external).
Kripke argued that reference is direct and that objets are identified over time by a causal history leading back to a baptism.

Similarly, for Putnam, the reference of 'water' is determined not by the individual, but by a small group of experts, the scientists, who determine what the essence of the natural kind is.
The class of people who need to acquire a given natural kind term is larger than the class who need to know how to recognize it.
With the rise of science, it is too time-consuming and inefficient for members of a community to all know how to identify surely each term.

> It is obviously necessary for every speaker to be able to recognize water (reliably under normal conditions), and probably most adult speakers even know the necessary and sufficient condition "water is H_2O," but only a few adult speakers could distinguish water from liquids that superficially resembled water. In case of doubt, other speakers would rely on the judgment of these "expert" speakers. Thus the way of recognizing possessed by these "expert" speakers is also, through them, possessed by the collective linguistic body, even though it is not possessed by each individual member of the body, and in this way the most *recherché* fact about water may become part of the *social* meaning of the word although unknown to almost all speakers who acquire the word (705).

Thus, reference is determined only by the experts in a division of linguistic labor.

The average speaker does not acquire anything which fixes the extension of the term.

Ordinary people have facility with stereotypes, which they can indicate through ostensive definition or by description.

In describing, one might refer to a stereotype, an exemplar with typical features.

Speakers are required to know about the stereotype in order to count as having acquired a word.

These requirements vary with the community and its needs.

When we call something 'water', we imply that the microstructure must be the same for anything else to be water.

The references of our natural-kind terms depend not on our individual thoughts or intentions but on the community as a whole.

> There are two sorts of tools in the world: there are tools like a hammer or a screwdriver which can be used by one person; and there are tools like a steamship which require the cooperative activity of a number of persons to use. Words have been thought of too much on the model fo the first sort of tool (706).

V. Ramifications of Externalism

Frege, recall, thought that when we refer to an object, we do so, privately, by apprehending a public (if not concrete) meaning which determines the referent of my term.

The Fregean picture results in the following puzzle.

> A. Our thoughts determine the meanings (senses) of our sentences. Even if we accept Frege's claim that meanings are public abstracta, the psychological state of grasping that concept is still private.
> B. Sense determines reference. That is, it is impossible for terms to differ in extension while having the same intension.
> C. Reference can vary without variation in thought, as the externalist cases show.

A, B, and C are internally inconsistent.

On pain of contradiction, we have to give up one of the claims.

C is a datum from the thought experiments.

One might deny the plausibility of the thought experiments, though they seem compelling to me.

Putnam suggests abandoning A.

> Cut the pie any way you like, "meanings" just ain't in the *head!* (704).

That is the externalist solution.

The third option would be to give up on the determination of reference by sense, B.

We have been assuming so far that all intensionalism is Fregean intensionalism.

But, it is possible to have a theory of meaning on which senses do not determine references.

For example, see the work of Jerrold Katz.

We have reached the end of the reference section of our course.
There is more to be said about reference, of course.
If reference is direct, for example, Frege's puzzle about cognitive content remains.
Similarly, if we abandon Frege's senses, then we lose his analysis of indirect discourse and the problem of opaque contexts re-emerges.
Even the problem of empty names reappears for extensionalists.
It is as if we have regressed to the pre-Fregean, Millian theory of names, as if Frege's work never came along.

So, it may seem puzzling why people prefer extensionalist theories, why some philosophers reject meanings.
Quine, for example, calls intensions creatures of darkness.
To see why meanings are reviled and rejected by many philosophers despite their theoretical utility, we have to spend some time thinking more carefully about meaning itself, how language gets its content, rather than about reference and truth.

We will start with the early Wittgenstein and the logical empiricists.
Wittgenstein's work is an attempt to use Frege's logic to solve all philosophical problems.
The logical empiricists, inspired by Frege and Wittgenstein, brought Hume's empiricism into the twentieth century and created philosophy of science along the way.