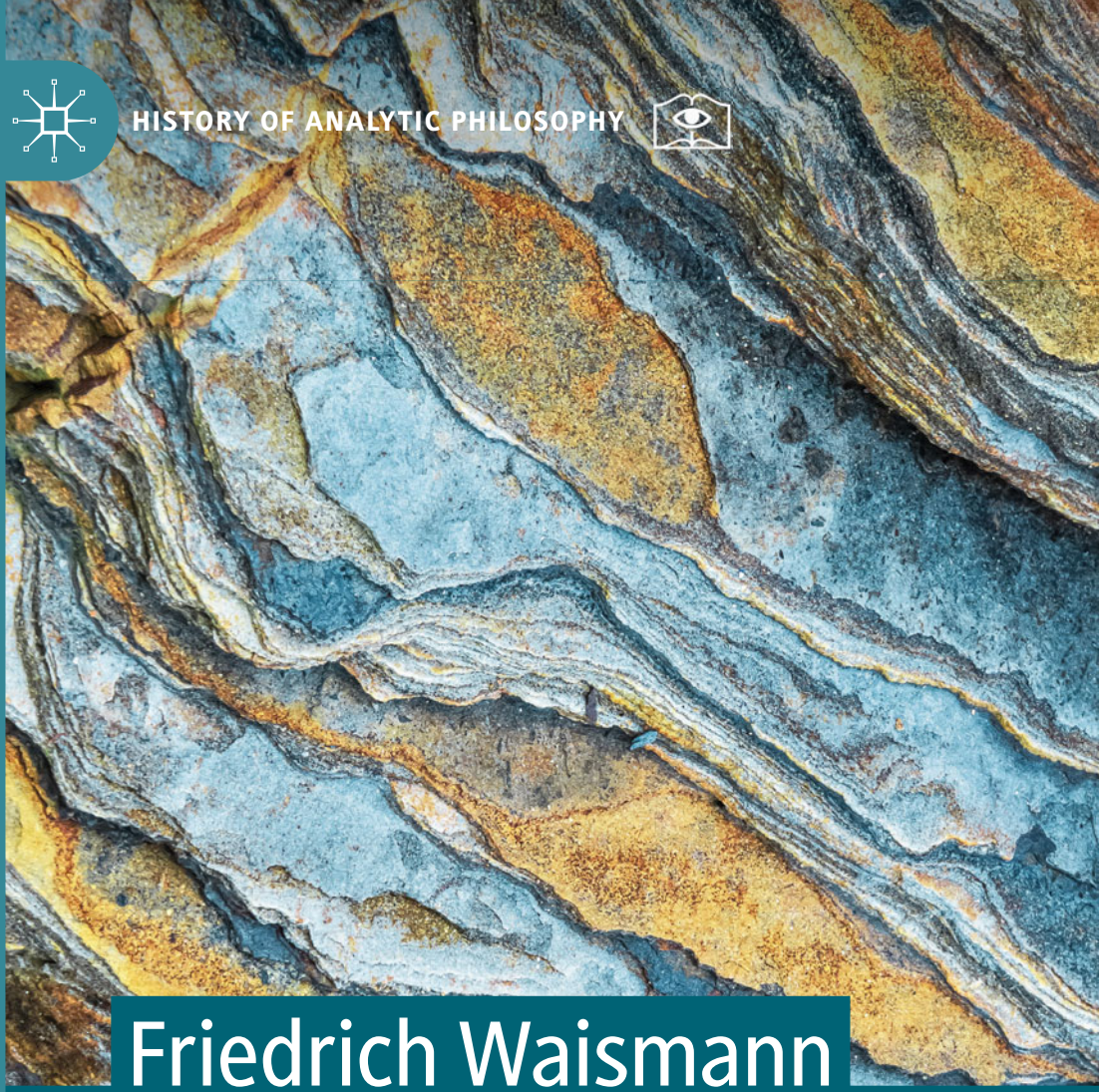

HISTORY OF ANALYTIC PHILOSOPHY

Friedrich Waismann
The Open Texture of Analytic Philosophy

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9

Open Texture and Analyticity

Stewart Shapiro and Craige Roberts

Friedrich Waismann's notion of open texture was introduced in (1945), as a contribution to a symposium on verifiability. Around the first appearance of W. V. O. Quine's celebrated "Two dogmas of empiricism" (1951), Waismann published a series of six papers, entitled "Analytic–Synthetic" (1949, 1950, 1951a, b, 1952, 1953). Apparently, that project was never completed since each article, including the last, ends with "(To be continued)", and there is no definitive conclusion.

The purpose of this note is to compare and contrast the underlying accounts of language and linguistic communication in these two projects. There is some overlap, and the two reinforce each other, but the "Analytic–Synthetic" series presents a more far-reaching view.

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1 Open Texture

Let P be a predicate, from a natural language. According to Waismann (1945), P exhibits *open texture* if it is possible for there to be an object a such that nothing concerning the established use of P, and nothing concerning the non-linguistic facts, determines that P holds of a, nor does anything determine that P fails to hold of a. In effect, the truth of the sentence, or proposition, expressed by Pa is left open by the use of the language and the non-linguistic facts. Nothing languages users have said or done to date—whether by way of the ordinary use of the term in communication or in an attempt to stipulate its meaning—fixes how the term should be applied to the new cases.

Waismann first illustrates the notion with a philosophical thought experiment (pp. 121–122):

> Suppose I have to verify a statement such as "There is a cat next door"; suppose I go over to the next room, open the door, look into it and actually see a cat … [M]ust I … touch the cat, pat him and induce him to purr? And supposing that I had done all these things, can I then be absolutely certain that my statement was true? …What, for instance, should I say when that creature later on grew to a gigantic size? Or if it showed some queer behaviour usually not to be found with cats, say, if, under certain conditions, it could be revived from death whereas normal cats could not? Shall I, in such a case say that a new species has come into being? Or that it was a cat with extraordinary properties?

The specific target of Waismann (1945) is a crude form of verificationism, but, as he emphasizes, the utility of the notion of open texture goes well beyond its use in attacking that view. One should not put too much emphasis on the epistemic/verification language in Waismann's example. The idea is that, in the new cases, the application of the predicate to the object has not been determined. It is "open".

A few sentences later, Waismann expresses the central thesis behind the notion, again with reference to verificationism:

> The fact that in many cases there is no such thing as a conclusive verification is connected to the fact that most of our empirical concepts are not delimited in all possible directions.

Waismann speaks here of empirical *concepts*, and so perhaps the notion is aimed at psychology, or the philosophy of mind, but it seems clear that the notion is meant to apply to the meaning of *words*, or at least the meaning of words that pick out empirical concepts.

Here is a useful characterization from Simon Blackburn's *Oxford Dictionary of Philosophy* (1996), with explicit focus on linguistic "expressions":

> **open texture**: The term, due to Waismann, for the fact that however tightly we think we define an expression, there always remains a set of (possibly remote) possibilities under which there would be no right answer to the question of whether it applies. This …is not the same as vagueness, since in actual situations the application of the term may be quite definite. For example, the term "mother" is not vague, but its open texture is revealed if through technological advance differences open up between the mother that produces the ovum, the mother that carries the foetus to term, and the mother that rears the baby. It will then be fruitless to pursue the question of which is the 'real' mother, since the term is not adapted to giving a decision in the new circumstances.

Waismann (1945, 123) is also explicit that open texture is not the same as vagueness—and here he does focus on words:

> *Vagueness* should be distinguished from open texture. A word which is actually used in a fluctuating way (such as "heap" or "pink") is said to be vague; a term like "gold", though its actual use may not be vague, is nonexhaustive or of an open texture in that we can never fill up all the possible gaps through which a doubt may seep in. … Vagueness can be remedied by giving more accurate rules, open texture cannot. An alternative way of stating this would be to say that definitions of open terms are *always* corrigible or emendable.

It is not clear what Waismann or, for that matter, Blackburn means here by "vagueness", although the two examples Waismann mentions, *heap* and

pink, are paradigm cases of what we would call vague expressions today. Sorites series for those two terms are easily conjured up.

There is no need to adjudicate whether open texture really is, or is not, a kind of vagueness—or whether vagueness is a kind of open texture. Today, "vague" is something of a term of art in philosophy and linguistics.[1] "Open texture", as defined here and in Waismann (1945), is a kind of semantic indeterminacy. One might think of vagueness also as a kind of semantic indeterminacy, with a certain understanding of borderline cases. Indeed, one might just use the term "vague" to apply to any and all kinds of semantic indeterminacy, but that would beg the question against epistemicist and some contextualist and relativist accounts of vagueness.

Waismann's point here seems to be that typical cases of vagueness can be eliminated, or at least attenuated, by giving more precise definitions. If we wish, we can replace a vague term, like *tall*, with one that gives a more precise boundary: Let's agree to call a man "tall" just in case his height is greater than, or equal to, 1.835 m.

There is, of course, a practice of giving some terms more precise definitions, often for scientific purposes. Think of the technical definitions of *force*, *weight*, *mass* and the like. And for legal purposes, a loose term like *home* or *residence* can be replaced by *domicile*, with instructions to look the term up in the relevant statutes. In either case, however, we are never certain that all possible indeterminacy has been ruled out. We get the term precise enough for whatever purposes are at hand; open texture may nevertheless remain.

Waismann's point is that with typical cases of vagueness, we know how to sharpen the term. With open texture, this is not possible, since we do not know where the indeterminacy comes from.

We suspect that many, but of course, not all philosophers nowadays would agree with Waismann that "most of our empirical concepts" exhibit open texture. This seems intuitively correct for terms denoting artifacts, such as *car*, *chair*, *table*, and *house*.

However, it is also common to argue that so-called "natural kind" terms—as that phrase is used in philosophy—are exceptions. Natural kind

[1] In the entry "vagueness", Blackburn (1996) says, "A term that is perfectly precise would generate no borderline cases". He goes on to tie vagueness to the presence of a sorties paradox.

terms supposedly pick out properties that have fixed extensions in all metaphysically possible worlds. The idea seems to be that the use of some terms reflects a deference to the progress of Science.[2]

To use a worn metaphor, there seems to be an implicit belief that natural kind terms, or the properties they represent, somehow "cut nature at its joints". And Science is in the business of discovering these "joints". So the progress of Science will tell us whether various hitherto unconsidered cases fall under the kind in question, and this future study will correct any mistakes we now make with the terms.

It is thus noteworthy that Waismann (1945, 122–123) initially illustrates the notion of open texture with what is usually taken to be a natural kind term:

> The notion of gold seems to be defined with absolute precision, say by the spectrum of gold with its characteristic lines. Now what would you say if a substance was discovered that looked like gold, satisfied all the chemical tests for gold, whilst it emitted a new sort of radiation? 'But such things do not happen.' Quite so; but they might happen, and that is enough to show that we can never exclude altogether the possibility of some unforeseen situation arising in which we shall have to modify our definition. Try as we may, no concept is limited in such a way that there is no room for any doubt.

[2] Key historical sources include Hilary Putnam (1970, 1975) and Saul Kripke (1980). Putnam (1970, 189) once wrote:

> Even if we could define "natural kind"—say, "a natural kind is a class which is the extension of a term *P* which plays suchandsuch a methodological role in some well-confirmed theory"—the definition would obviously embody a theory of the world, at least in part …what really distinguishes the classes we count as natural kinds is itself a matter of (high level and very abstract) scientific investigation and not just meaning analysis.

Waismann goes on to explain:

> We introduce a concept and limit it in some directions; for instance we define gold in contrast to some other metals such as alloys. This suffices for our present needs, and we do not probe any farther. We tend to overlook the fact that there are always other directions in which the concept has not been defined …it is not possible to define a concept like gold with absolute precision; i.e., in such a way that every nook and cranny is blocked against entry of doubt. That is what is meant by the open texture of a concept.

Nowadays, it is common to define *gold* in terms of its atomic number instead of its spectrum. Intuitively, it is the same concept all along. Perhaps we have it right now.

The received view, then, is that natural kind terms do not exhibit the kind of open texture broached above. The idea seems to be that such terms are intended (or designed) to pick out "joint-carving" properties. If they do so, then we can count on our future scientific endeavors to determine the precise boundaries of the concept, in any and all possible situations.

It is sometimes held that natural kind terms are themselves rigid, picking out the same "kind" in all worlds. Putnam (1975, 157) once wrote that we use natural kind terms "*rigidly* to refer to whatever things share the *nature* that things" satisfying a given description "normally possess" (see Hacking (2007) for a historical treatment, in the works of Kripke and Putnam). The view assumes that nature *has joints*, which can be referred to by stable predicates that hold of stable objects.

We neither endorse nor repudiate the underlying metaphysical assumptions. We do note, however, that the application of natural kind terms is limited to worlds sufficiently like ours—those with the same "joints" at least. There is also a tricky issue as to how one determines whether a given term is supposed to designate a natural kind. That is, what is it that makes a term one that is intended to pick out a natural kind? Intended by whom? Are there linguistic markers for this?[3]

[3]See Lassiter (2008) for an illuminating account of the evolution of natural language, to accommodate the intutions behind the standard accounts of natural kind terms. Lassiter suggests that natural kind terms are associated with speakers' dispositions to defer to certain members of their lin-

The purpose of at least some terms is to *classify*: we use them to divide objects into categories. It is reasonably clear that how one classifies depends on what one is doing—what the classification is for. And that, of course, depends on one's underlying purposes. For describing various recipes, we lump tomatoes with lettuce, but for purposes of biology, it makes more sense to classify tomatoes with oranges.

In other words, classification is context-sensitive—interest relative in particular. Putnam (1975, 157) agrees, but gives pride of place to the properties of interest to Science:

> Importance is an interest-relative notion. Normally the "important" properties of a liquid or solid, etc., are the ones that are *structurally* important: the ones that specify what the liquid or solid, etc., is ultimately made out of—elementary particles, or hydrogen and oxygen, or earth, air, fire, water, or whatever—and how they are arranged or combined to produce the superficial characteristics.

Of course, scientific purposes are important, and the classificatory schemes they adopt help explain, predict, and control a wide range of phenomena. To adopt a slogan of Wilson's (2006, 614), we "yield the lamp of Scientism to no one".

But it does not follow that scientific purposes are the only ones that are, or should be, used to determine the extensions of various terms in various contexts. Humans have all sorts of purposes, and use language to pursue these purposes. The semanticist is interested in the entire range of linguistic phenomena. The philosopher, or at least the philosopher of language, should be as well.

Nor does it follow that Science deals, or should deal, or strives to deal, with predicates that are absolutely sharp, which definitely decide every possible case in every possible situation, predicates in which "every nook and cranny is blocked against entry of doubt", as Waismann might put it. The more "fundamental" sciences, physics and chemistry, are concerned with possible worlds with the same fundamental principles as the actual universe. Biology is concerned only with creatures on this planet, or at

guistic communities, presumably the scientists. Many of his conclusions dovetail with Waismann's, especially concerning the flexibility and evolution of natural languages.

least with creatures with similar evolutionary histories to those here. What counts as a "joint" varies from science to science. Neither is concerned with what philosophers call metaphysical possibilities.

We end this section with two observations about open texture, as characterized above. First, some of the examples reveal that some terms have, or had, *presuppositions* concerning their normal use.[4] Open texture can become evident when these presuppositions fail, or are imagined to fail. Consider, for example, Blackburn's (1996) treatment of the term *mother*. For a while it could be safely assumed—presupposed—that someone who produces an ovum, someone who carries the resulting foetus to term, and a female that rears the baby are one and the same person. Or at least the normal use of the term "mother" did not allow for these to come apart (adoptive-mothers and step-mothers aside, at least concerning the third role). Waismann's own opening example highlights that language users assume that cats have certain features, for example, they do not spontaneously grow to a gigantic size, and they cannot be revived from death. The open texture results when we imagine these presuppositions failing, or when they actually do fail. Of course we do not claim that every instance of open-texture is like this.

Second, when new, unexpected cases *are* encountered, it is easy to remedy the situation. One option is for the linguistic community to decide the cases, one way or the other. A second possibility is that the term may become polysemous, sometimes used to include the new cases, sometimes to not include them. Or some context-sensitivity might emerge. As with most classifications, it may depend on the interests of one or another subgroup of language users. A third option is to coin new terms: *biological mother*, *gestational mother*, …in Blackburn's case.

To be sure, when a term is extended, or replaced, or becomes polysemous in this way, some open texture can remain. It is indeed hard, and not particularly helpful, to decide, in advance, every possible case. Waismann (1945, 124) waxes metaphorical:

[4]We are using "presupposition" a bit loosely here. We do not claim that it satisfies all of the roles that presuppositions have in contemporary semantics. For example, the common ground is not updated to include them. Thanks to Giorgio Sbardolini for pressing this.

> I shall never reach a point where my description will be completed: logically speaking, it is always possible to extend the description by adding some detail or other. Every description stretches, as it were, into a horizon of open possibilities: how far I go, I shall always carry this horizon with me.

2 Analytic-Synthetic

In the "Analytic–synthetic" series (1949, 1950, 1951a, 1951b, 1952, 1953), Waismann provides a rich and subtle conception of analyticity and meaning, and the role that analyticity and synonymy play in linguistic interpretation. Toward the end of the series, he broaches something that is at least in the spirit of open texture (1953, 81–82):

> What lies at the root of this is something of great significance, the fact, namely, that language is never complete for the expression of all ideas, on the contrary, that it has an essential *openness*.

However, the conclusions of the series go much further than open texture.

Waismann begins with an attempt to define a sentence to be analytic if it is a consequence of a definition, or if it can be transformed into a logical truth via definitions. The second article in the series discusses the notion, or role, of definition (1950, 25–26)[5]:

> What, then is a *definition*? A definition, it seems, is a licence which permits us to replace a word, or a symbol, by the *definiens*, i.e. to translate an expression into a different idiom. When we say this sort of thing, what we have in mind are perhaps *explicit* definitions, …illustrated by such stock examples as "A planet is a heavenly body revolving round the sun". And we are perhaps tempted to think that *every* definition conforms to this archetype. We are apt to forget that definitions of this kind are of use only in comparatively simple and trivial cases. The more interesting concepts such as truth and falsity, meaning and purpose, cause and effect, intelligence, time, number,

[5] In light of the developments concerning Pluto, not to mention asteroids and planets of other stars (which Waismann himself mentions in (1949, 31)), the example is perhaps not the best. Maybe something like "a vixen is a female fox" or "a bachelor is an unmarried male" would be better.

> which fascinate theorists, elude our efforts to pin them down in this way and only mock such clumsy attempts at defining.

Waismann points out that there are lots of different things that go by the name of "definition": recursive definition, ostensive definition, implicit definition, etc. Which of them are appropriate to cite when claiming that something is analytic? He concludes (1950, 25):

> I have defined 'analytic' in terms of 'logical truth', and further in terms of certain 'operators' used in transforming a given sentence into a truth of logic. The accuracy of this definition will thus essentially depend on the clarity and precision of the terms used in the definition. If these were precisely bounded concepts, the same would hold of 'analytic'; if, on the other hand, they should turn out to be even ever so slightly ambiguous, blurred, or indeterminate, this would affect the concept of analytic with exactly the same degree of inaccuracy …
> I shall try to show that both concepts ["operator" and "logical truth"] are more or less blurred, and that in consequence of this the conception of analytic, too, cannot be precisely defined.

It would seem then, that the notion of being 'analytic' suffers from open texture. A definition of "analytic" is no clearer, or more precise, then the least precise of the terms used in the definiens.

Waismann's agenda, however, is much deeper than this. He asks what is the *point* of *calling* a given sentence analytic—what role does that term play in our understanding of language? One role is to highlight certain presuppositions of the use of the term or phrase in question, items that one can take for granted, and that one can assume that one's interlocutors take for granted (and that one can assume that the interocutors assume that you take for granted, …). These are important for interpreting and understanding each other.

In the third article in the series. Waismann (1951a, 50) asks whether the sentence "Time is measurable" is analytic. He suggests:

> We are, perhaps, first inclined to answer, yes. What tempts us to do this is that it seems to be *part of the meaning* of 'time' that time should be measurable. Yet this claim can hardly be substantiated, *i.e.* there seems to

> be hardly any way of transforming the given expression step by step into a truth of logic. What we could do is, at the most, to point out some of the uses (such as 'timing', 'timepiece', 'What is the right time?', etc.) which seem to indicate that time is measurable. This, however, will lead only to a scarcely enviable position since there is no sharp line which separates those uses which, as one would say, are *characteristic* of the concept, from those which are not.

This last is, of course, a familiar Quinean theme.[6] One could cite examples where the use of the word *time* does not seem to imply that it can be measured: 'have a good time', 'the time of my life', 'several times', …Unlike Quine, Waismann does provide a positive role for analyticity in how to understand language or, perhaps better, to understand the phenomenon of linguistic communication.

Waismann next invites the reader to consider the period when people had no precise ways to measure intervals of time ("before sand-glasses, water-clocks, or sun-dials had come into use"), and presents some thought experiments in which there does not seem to be a stable way to measure temporal intervals. Suppose, for example, that time-in-days did not coordinate with time-in-hour-glasses, nor with anything else. In effect, we are asked to suppose that we can find no constant ratios among events that are independent of the mode of measurement. Waismann (1951a, 50–51) writes:

> Would you be prepared to say that, in case the world was such that time could not be measured—say, because of the absence of sequences of recurrent events—time would not be what it is now? Here, I suppose, you may be inclined to say that it lies *in the nature of time* that it can be measured. But what do you mean by the expression 'it lies in the nature of time'? That this is part of the *definition* of the word 'time'? But as there is no definition to refer to, but only a use, forming a vast maze of lines, as it were, you will feel that this argument loses its point. On what, then, rests your assurance?

[6]The only mention of Quine in the entire series is in the first article (1949), where the main point of "Truth by convention" (Quine 1936) is endorsed.

Waismann next asks whether it is analytic that pain *cannot* be measured. This is a perhaps ironic (or prophetic) example in light of later developments in pain science. The upshot is this (Waismann 1951a, 53):

> When we were asking … whether the meaning of 'time' or 'pain' changes when a method of measuring is introduced, we were thinking of the meaning of a word as *clear-cut*. What we were not aware of was that there are no *precise rules* governing the use of words like 'time', 'pain', etc., and that consequently to speak of the 'meaning' of a word and to ask whether it has, or has not changed in meaning, is to operate with too blurred an expression.

The "too blurred expression" here is something like "has the same meaning", i.e., synonymous. Like the closely related case of "analytic", the relation expressed by "has the same meaning as", applied to different periods, is "blurred"; there are borderline cases.[7]

This, of course, is also a main theme of Quine (1951). Putnam (1968) comes pretty close to Waismann here. He proposed that quantum mechanics be formulated using a quantum logic. He then raised the question as to whether this involves a change of meaning concerning the logical terms *or*, *not*, and *and*, or whether we were just mistaken in thinking that the distributive principles hold for these terms (see also Putnam (1957), where a similar issue is raised concerning excluded middle). Putnam concludes, at the end of (1968, §6), that "we simply do not posses a notion of 'change of meaning' refined enough to handle" the questions.

Quine's lesson is that there simply is no important role for analyticity, synonymy, and the like, in any respectable scientific endeavor. Waismann does not follow this. A "blurry" distinction is still a distinciton (as famously observed by Grice and Strawson (1956)).[8] The crucial question is what this distinction is for. What is one doing by invoking it?

[7] Shapiro (2014, Chapter 5) argues that "has the same meaning as" is context-sensitive. Whether two instances of a given expression have the same meaning depends on what is salient in a given conversational context.

[8] Putnam (1968) is closer to Quine than Waismann here, holding that Quine was "more right than wrong". Putnam developed a more limited role for analyticity. See Shapiro (2018).

Waismann (1951a, 53) concludes that someone

> may be inclined to say: "Though 'time is measurable' and 'rock salt is cleavable', sound superficially alike, they are very different: the one is accidental, the other is not." And you say that perhaps in the tone of a man who is calling attention to a notorious fact. But in saying this you do not want to object to any of the facts which make it possible to measure time. You do not want to state, or deny, any fact at all. What you don't see is that you are *irresistibly urged* to use a certain mode of representation which means a lot to you, in fact *that* mode which enables you to visualize with the greatest ease all sorts of temporal relations. As so often in philosophy, a statement appears so convincing precisely because it is …the obscure expression of a desire to use certain images, or a certain pictorial representation, to satisfy certain needs.

In other words, the normal use of the word "time" *presupposes* that it can be measured, or at least it does now—and to ask if this particular word changed its meaning is to operate with the "too blurred expression", namely "same meaning".

Back in the second article (1950, 25), he writes:

> it is significant that we do not only "find out" that a given statement *is* analytic; we more often precisify the use of language, chart the logical force of an expression, by *declaring* such-and-such a statement to be analytic. If 'analytic' was as fixed and settled a term as, say, 'tautology' is, this would be hard to understand: can I, e.g., by decree appoint a given statement to the rank of tautology? It is precisely because, in the case of 'analytic', the boundary is left open somewhat that, in a special instance, we may, or may not, recognize a statement as analytic.

Again, the point of declaring that a given statement is analytic is to highlight, or make salient, a presuppositon of its (normal use), something we take for granted in interpreting each other.

Section 5, "Ordinary language", is a key to the series. It begins in the fourth article (1951a, 121) and ends in the sixth (1953, 79). Its target is the "ordinary language" movement within philosophy, but his conclusions are far-reaching.

The following passage from (1953, 74) concerns the transitivity of "same length":

> The appeal to the actual use of language is *not the ultimate test* we apply when we want to establish a necessary truth. Suppose the question is whether the relation 'equal', as applied to length, is transitive, and necessarily so. Imagine three rods $a, b, c, \ldots$ For the purpose of comparison they are placed side by side in pairs, … Suppose now that inspection shows a and b to be equal, and also b and c: does this, or does this not, entail that a and c are equal? There is a tendency to say that it does, and its supporters will have recourse to the use of language. Don't you see, they will say, that the word 'equal' is actually used in this way? But how do we know that language is *right*? Is it a sort of Supreme Court from which there is no appeal? Or is it really impossible to give a sense to a non-transitive use?

In his attack on the "ordinary language" school of thought, Waismann then gives a thought experiment, much like the one involving strange cats:

> What would you say, we might ask a champion of the ordinary use, if it was found that, though a and b, and b and c had the same length, namely judged by the criterion, (placing them side by side), yet a, when directly compared with c, was a bit shorter? That "there must have been some mistake somewhere"? But what if it was always like this? … Suppose now that he replies something like this: If rods were ever to behave in this curious sort of way, this only shows that some distorting influence was at work; but what has this to do with their length? The question was whether $a = b$ and $b = c$ entail $a = c$. To this the answer is Yes, no matter how queerly material rods behave. Our concern is with *spatial intervals*, not with sticks. Though there is some truth in this, it is not the whole truth.

Waismann then turns to the heart of the matter, indicating what one is doing in invoking analyticy:

> He … wants to make the inference *independent of experience* so that he can stick to it whatever may happen to the physical rods. That is to say, he insists on using a language in which '$a = b, b = c$, so $a = c$' is an *inference licence*, not an empirical statement, or again, in which this relation is adopted

> as a *convention*. But as a convention, emptied of content, it does not say anything about the actual world, and in particular it does not help us to infer, or predict, the results of experiments with actual rods.

The upshot is that the opponent's statement of analyticity may, in the end, be useless or counterproductive to communiction:

> [I]f we were living in a sort of Lewis Carroll world where things expand and shrink unaccountably, what will become of your rule? You may cling to it, yes; and you may insist that any deviation observed must be due to some distorting force, blaming physics for the discrepancy. Yet the fact remains that your rule cannot be relied on. So what is the good of having it? Wouldn't you do better without it?

Once again, the necessity, or the analyticity, of the transitivity of identity of length reflects a *presupposition* of the normal use of this term. It is used with the understanding that it is transitive, that one's interlucutors know this, that they know that you know it, etc.

Waismann argues, in general, that these presuppositions *can be* challenged, and sometimes *are* challenged (1953, 79):

> [W]e are not *slaves* of the existing language. On the contrary, we are free to criticize it, discuss its merits or demerits in certain respects and *in the light of reasoning*, and then decide whether to stick to it, or else to modify or redesign its use. Take once more the use of 'equal'. Is it necessary that it should be used transitively? [But this is] only necessary relative to a language which we are agreed to apply … [W]e can decide otherwise …it is not the language *habits* on which the issue hinges.

The "Ordinary language" section (§5) contains a number of insightful comments on the use and evolution of language. The following sample is representative (1951b, 122–123)[9]:

[9]Waismann also broaches what is now called the "Whorf-Sapir" hypothesis that language somehow influences, or even determines, one's world view. One need not endorse this in order to appreciate the themes presented here.

Simply thus to refer to "the" ordinary use is naive. There are *uses*, differing from one another in many ways, e .g. according to geography, taste, social standing, special purpose to be served, and so forth. This has long been recognised by linguists who distinguish between … literary style and more colloquial speech, slang and idiom, or again between jargon, cant, and argot; not to mention shop-talk, college lingo, etc. All these are particular ways of using language, loosely revolving around a—not too clearly defined—central body, the standard speech. Thus one may, not without a show of reason, speak of a *prevailing* use of language, a use, however, which by degrees shades into less established ones. And what is right, appropriate, in the one may be slightly wrong, wrong, or out of place in the others. And this whole picture is in a state of flux. One must indeed be blind not to see that there is something unsettled about language; that it is a living and growing thing, adapting itself to new sorts of situations, groping for new means of expression, for ever changing.

The key term here is "changing". It is not only a matter of accommodating unforeseen cases into empirical terms, as the consideration of open texture might suggest. The changes can be much more radical than this (1952, 6–8):

Language is an instrument that must, as occasion requires, be bent to one's purpose.

…

What those sticklers for correctness prefer not to see is that we are living in a *changing world*, and that language is always lagging behind these changes.

…

Yet new situations, unforeseen, arise, and with them the need of describing them; it can only be met by adjusting language—either by coining new words, or, as the word creating faculty is scanty, by pressing old ones into new services, in this way cutting through the dead mass of convention. It is precisely because speech runs so much in ready-made moulds that an occasional anomaly, a happy flouting of the laws of grammar, an uncommon phrasing, arouses our attention and lends lustre to the point we want to bring out. It is in this way, by *transgressing*, that language manages to achieve what it is meant to achieve, and that it grows.

To extend a point made above, when discussing open texture, this applies, just as well, to the languages used in science. In discussing proposed conceptual changes in science (and philosophy), Waismann says that "breaking away from the norm is sometimes the only way of making oneself understood" (1953, 84). The idea is that the scientist (or philosopher) can sometimes make her point only by violating the established meaning of certain words. And yet the scientist (or philosopher) does sometimes manage to make such a point (1952, 8):

> Not only should the scientist be free to deviate from common language, where the need arises, but he is bound to do so if he is to convey a new insight not in conformity with the ideas dominant of the time, with ideas, moreover, precipitated in language.

Waismann (1952, 8–19) takes up Albert Einstein's revolutionary revision of the notion of simultaneity and its ramifications for the meaning of the term *simultaneous* and other expressions like *same length* (which, we have seen, is another of Waismann's favorite examples). This is a particularly interesting case because it feels very close to open texture, but again more complex since it involves more than just an actual encounter with unexpected cases. In this case, the phenomenon was driven by physical theory. And it is not just a matter of accommodating new and unforeseen cases into the extension, or anti-extension, of the terms.

Prior to Einstein, *simultaneous* was a two-place predicate; two events were simultaneous just in case they occurred at the same time. So the extension of the term, in any given situation, was a set of pairs of events. Linguistically, it still is, at least outside the language of physics, and it will probably remain that way until the kinds of situations that relativity calls for become part of our common experience (if they ever do). The same goes for *same length*, the very same example discussed above (outside the context of relativity).

But Einstein taught us that, in full generality, simultaneity must be relativized to a frame of reference. Two events may be simultaneous from the perspective of one inertial frame, but non-simultaneous from another. The same goes for statements of sameness of length. Semantically, this means that *simultaneous* and *same length as* should become context-sensitive, turn-

ing on a new parameter. The term represents a function from a (frequently presupposed) frame of reference to a function from situations to pairs of events.

This, of course, is not a mere philosophical thought experiment. We are convinced that the cases are real—in the actual world. Here is how Waismann put it (1952, 8, 9):

> The classical example of this is Einstein. When he was groping his way, there was, in his own words, 'a feeling of direction', of going towards something he didn't quite know—which centred more and more on a suspicion that all was not well with the idea of simultaneity.
>
> …
>
> Had he been brought up … imbued with a belief in the infallibility of the ordinary modes of expression, he could never have made his discovery, clogged as he would have been by the dead weight of usage …This 'seeing' of a crucial point in the meaning of 'simultaneous' has *absolutely nothing* to do with the way the word is actually used in language. It is as well to remind you that in 1905, when Einstein's first essay appeared, there was only *one* use, not two uses of 'simultaneous', and that it would be absurd to pretend that, when Einstein found a difference in meaning, he was making a *linguistic* discovery.

One might note that a related idea was once sketched by Henri Poincaré (1908, 235), with a somewhat ironic prediction (given the accuracy of hindsight):

> In astronomy 'straight line' means simply 'path of a ray of light'. If therefore negative parallaxes were found …two courses would remain open to us; we might either renounce Euclidean geometry, or else modify the laws of optics and suppose that light does not travel rigorously in a straight line. It is needless to add that all the world would regard the latter solution as the most advantageous.

As a matter of fact, the "latter solution" was not found to be the most advantageous, at least in physics.

3 Summary and Conclusions

The themes of open texture, from Waismann (1945), present a view of language, or at least the empirical aspects of language, as being open. No matter how much we, the language users, try to delimit the extensions and anti-extensions of certain terms, there will, or could, remain possible cases that are left undetermined. This sort of indeterminacy is part of what is expressed in the "Analytic-synthetic" series, but the underlying account of the evolving nature of language goes much deeper. As new situations are encountered, and as our understanding of the world grows, we encounter cases where language gets things wrong—at least in the sense that normal presuppositions on the use of a term fail. Subsequently, language adapts to the new situation, or the new understanding.

Following Waismann, with at least some cases like these, to even ask whether an expression "has, or has not changed in meaning, is to operate with too blurred an expression" (Waismann 1951a, 53). Again, the blurred expression here is something like "has the same meaning as".

So we see that, according to Waismann, and the examples he chose to illuminate, there is a remarkable similarity between "simulataneous". i.e., "happened at the same time as", "same length as", and "has the same meaning as". They are all more or less blurry, subject to sharpening, etc.

This view of language should not engender a global skepticism about meaning and about the entire enterprise lexical semantics, along the lines of, say, Kripke's (1982) Wittgenstein—unless one insists that the meaning of an expression, along with the non-linguistic facts, determines its extension (and anti-extension) in any and all circumstances.[10]

A proper understanding of the limitations of language, including semantic indeterminacy and meaning-change, contributes to a more realistic and practical conception of what the enterprise of lexical semantics is up to and, indeed, a more realistic and practical conception of language and linguistic communication. For communication to succeed, in general, the meaning of each expression used should be *clear in the situations in which the expression is used*. Clarity in meaning is compatible with open texture,

[10]Thanks to Robert Kraut for pressing this issue.

and with ambiguity, vagueness, and all sorts of context-sensitivity as well. In the use of a term, clarity only requires:

contextualization Insofar as the term has contextual parameters which must be resolved in the context, (i) this must be clear to the users and (ii) the speaker's intended values for those parameters must be evident to all the interlocutors.

definedness The term must be well-defined, or well-defined enough, *in the intended situation of interpretation.*

In particular, clarity of meaning does not require that the term have a well-defined extension in any and all conceivable situations. It only has to be clear *whenever it is used*; that is, in the normal range of cases. Such cases provide the "data" of semantics. Bizarre thought experiments need not do so.

Given open texture, the flexibility of language, and, of course, context-sensitivity, vagueness and ambiguity, one might ask how clarity differs from what we might call the *precision* of an expression.

Let us say that a term (or expression more generally) is *precise*, or perhaps fixed, or completely settled, if it is determinate what its extension would be in any given situation of interpretation, i.e. it is always well-defined, no matter what. Standard possible worlds semantics and model theory both seem to presuppose this kind of precision, perhaps as an idealization for the sake of theorizing.[11]

The upshot of open texture, and the Analytic-Synthetic series, is there are very, very few precise expressions in natural language, and maybe only a few in scientific and logical language as well. Arguably, the only precise expressions are those found in rigorously defined mathematics.[12] For most expressions of natural, and even scientific languages, to ask whether they can be used precisely may be the wrong question. Instead, we might ask: *Can the expression be used clearly in the kinds of context of use which we know*

[11]This is not the place to fully articulate these notions, and show how they relate to each other. Contextualization and definedness, once discovered, make expressions more precise, without, perhaps, making them fully precise. We plan on developing these themes in future work.

[12]We plan to address this matter in future work.

to arise? As Waismann notes, when other contexts come up, language can evolve to meet the needs.

It may be that which question we ask is interest-relative: e.g., some logicians and some mathematicians, some of the time, may be interested in absolute precision. Physicists may be interested in precision in all physically possible situations. Biologists, economists, and the ordinary users of natural language focus on a more narrow range of situations. For semantics, clarity is the more relevant notion.

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