Evading the Slingshot[*]

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The topic of this essay is "the slingshot," a short argument that purports to show that sentences[1] designate (stand for, refer to) truth values. Versions of this argument have been used by Frege[2], Church[3], Quine[4] and Davidson[5]; thus it is historically important, even if it immediately strikes one as fishy. The argument turns on two principles, which I call substitution and redistribution. In "Semantic Innocence and Uncompromising Situations,"[6] Jon Barwise and I rejected both principles, as part of our attempt

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[1]One should really talk about uses of sentences, since (most) sentences do not have either truth conditions or truth values—the two candidates for designata we consider—except as used on a specific occasion. But since I won't discuss issues of context sensitivity, I'll stick with "sentence," which fits with most of the literature on the slingshot.

[2]Olson discusses Frege and the slingshot, Olson, 1987, pp. 65-82.

[3]Church 1956, p.25

[4]Quine 1976, pp. 163-64

[5]Davidson 1967

[6]Barwise and Perry 1981

to dismantle the slingshot and defend the view that sentences stand for complexes of objects and properties rather than truth values. In his book *An Essay on Facts,*[7] Ken Olson maintains that our treatment turns on the structuralist conception of facts, and that this conception leads either to a block universe of co-implicating facts, or bare particulars. I'll first review the case against the slingshot, and then consider the issues Olson raises.

1 Do Sentences Designate?

As a preliminary we need to consider the very idea that sentences designate anything at all. We ordinarily talk about what terms refer to, stand for, or designate, but do not use these locutions with respect to sentences. Why should we? Because we want to systematically connect the designation of complex expressions with the designations of their parts. Many complex expressions have sentences as parts; to extend our principles of designation to such expressions, we need to accord designation to sentences.

Consider (1) and (2).

(1) The total number of votes Bush received

(2) The total number of votes Dukakis received

It is natural to say that (1) and (2) designate numbers. (1) and (2) designate the numbers they designate, in part because "Bush" and "Dukakis" designate the persons they designate. This suggests the principle that the object an expression designates helps to determine the object larger expressions of which it is a part designate. An account of expressions of the common form of (1) and (2) would make this dependence clear:

> Des("The total of number of votes α received") = The total number of votes Des(α) received.

Des is a function from an expression to its designation. We see in the principle how the designation of the part, Desα on the right hand side, contributes to the determination of the designation of the whole, the left hand side. Such principles identify two roles

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[7] Olson 1987

for designating expressions: being a part that contributes and being a larger whole that receives a contribution. Sentences can play both roles. If we can identify some factor connected with sentences that is systematically determined by what their parts designate, and is systematically determines that same factor with respect to the larger sentences of which they are parts, it will not be stretching things too far to call that factor what the sentence designates.

Sentences have factors associated with them that are systematically determined by what their parts designate, and sentences contribute something to the determination of this factor for the larger expressions of which they are parts. (3) and (4)

(3) Bush won.

(4) Dukakis won.

have different *truth conditions* and different *truth values,* because there is a difference in what "Bush" and "Dukakis" designate. These dependencies are reflected in this principle:

"α won" is true iff $\text{Des}(\alpha)$ won

(3) and (4) are parts of (5) and (6):

(5) It is not the case that Bush won.

(6) It is not the case that Dukakis won.

The truth conditions and truth values of (5) and (6) clearly depend on the truth conditions and truth values of (3) and (4). (5) is false because (3) is true; (6) is true because (4) is false.

In the case of (5) and (6), we could take the designation of sentences to simply be truth values. But for a wide variety of cases, truth values do not seem to work as the designata of sentences. (7) and (8) are both true, while (9) is true and (10) false, so (7) and (8) must be contributing something besides their truth values to (9) and (10):

(7) $2 + 2 = 4$

(8) Konigsburg is in Russia

(9) Necessarily $2 + 2 = 4$

(10) Necessarily Konigsburg is in Russia

Here it seems that the difference in truth *conditions* between (7) and (8) accounts for the difference in truth value of (8) and (9). The conditions of the truth of (7) are met no matter what, while those of (8) are quite contingent. So we might be inclined to think that at least for a wide range of cases we should accept (A)

(A) A sentence designates its truth conditions.

I'll present the slingshot as an attempt to show that (A) leads, in spite of its motivation, to truth values as the designata of sentences: even if we want truth conditions, we end up with truth values. Since we know that truth values won't work for cases like (7)–(10), this is an unwelcome result.

Intuitively, whether the truth conditions of a sentence are met or not will come down to which properties objects have and which relations they stand in. Two sentences that will be true if just the same objects have just the same properties and stand in just the same relations will have the same truth conditions. If sentences are the same in this way, its does not seem like it should matter how those conditions get presented or built up. These considerations appear to support two further principles:

(B) Substitution of one co-designating term for another does not affect the truth conditions of a sentence.

(C) Sentences whose truth requires the same objects to have the same properties have the same truth conditions, even if they differ in syntactic structure, and so construct requirements in different ways.

(A), (B) and (C) seem to guarantee two principles of "designation-preservation" for sentences.

> *Substitution*: (From (A) and (B)) Substitution of one co-designating term for another does not effect what a sentence designates.

> *Redistribution*: (From (A) and (C)) Rearrangement of the parts of a sentence does not effect what it designates, as long as the truth conditions remain the same.

The slingshot starts with a sentence, and then moves, by a series of substitution and redistribution steps to a completely different sentence. Since one gets from one sentence to the other by these steps, they must designate the same thing. But the only thing the sentences have in common are their truth values, so this must be what they designate. We'll look at two versions.

2   Two Slingshots

The first version is inspired by Church (Church, 1956):

C1. Scott is [the author of *Ivanhoe*].

C2. Scott is [the author of 29 *Waverley* novels altogether].

C3. 29 is [the number of Waverley novels Scott wrote altogether].

C4. 29 is [the number of counties in Utah].

The steps from C1 to C2 and C3 to C4 are substitution steps. The bracketed expressions in C1 and C2 designate the same object, Scott. The bracketed expressions in C3 and C4 designate the same object, the number 29. The step from C2 to C3 is a redistribution step. Since both substitution and redistribution preserve what is designated, C1 must designate the same thing C4 does. But then it seems like what is designated must just be truth values, for what else do C1 and C4 have in common?

The argument looks like a big trick. Let's call any property, relation or object designated by a simple expression in a sentence part of that sentence's subject matter. The step from C1 to C2 changes the subject matter; some of C1's *subject matter* is lost, and some new subject matter is introduced. In C3 the subject matter is redistributed, and in C4 substitution introduces new subject matter again, while jettisoning Scott, the last vestige of the original subject matter from C1 along with the novels introduced in C2.

Olson reconstructs a version the slingshot from Gödel's discussion of Russell. This argument looks too formal to contain a trick. One needs to assume that every sentence has an equivalent of the form k(a), and that for any two objects there is some true sentence of the form p(a,b) about their relationship. Let S and T be any two true sentences whatsoever, and f(a) and y(b) be their equivalents by the first assumption and

p(a,b) a true sentence by the second assumption. Then, if the first sentence in this series designates a certain object the rest should designate it also:

G1.   S

G2. $\phi(a)$ (First Assumption)

G3. $a = \iota x[\phi(x) \& x = a]$ (Redistribution)

G4. $a = \iota x[\pi(x,b) \& x = a]$ (Substitution, Second Assumption)

G5. $\pi(a,b)$ (Redistribution A,B)

G6. $b = \iota x[\pi(a,x) \& x = b]$ (Redistribution)

G7. $b = \iota x[\Psi(x) \& x = b]$ (Substitution, First Assumption)

G8. $\Psi(b)$ (Redistribution)

G9.   T   (First Assumption)

We need to emphasize that steps G1-G9 do not represent an *inference* from G1 to G9. We started with the assumption that G1 and G9 were both true. Each step represents a different sentence that can be seen to designate the same thing as the preceding one. The citations on the right do not refer to principles of inference, but to our principles of preservation of sentence designation. So the claim is not that G5 follows from G4, but that, given various facts about the world, including G5 itself, they designate the same thing.

In spite of its formal appearance, this argument turns on the same trick as Church's. The relation π is not part of the subject matter of G3, but is part of the subject matter of G4, while ϕ is part of the subject matter of G3 but not of G4. ϕ gets smuggled out and π smuggled in via the substitution of one description for another. The way the argument works is that the substitution moves changes the subject matter of the descriptions, while the redistribution moves push subject matter back and forth between the descriptions and the predicates. By the time we reach G8, the subject matter has changed completely.

3   Truth Conditions and Substitution

As Gödel notes, Russell's theory of descriptions allows him to evade the slingshot. On Russell's theory descriptions are not part of the primitive notation at all. G3 and G4 seem to put the same condition (being identical with a) on the same objects (the ones designated by the descriptions). But on Russell's theory, the descriptions do not really designate anything because they are not really there. If we look at the primitive

notation, we will be under no illusions about this:

G3′. $\exists x\,[(\phi(x)\,\&\,x = a)\,\&\,\forall y(\phi(y)\,\&\,y = a \rightarrow y = x)\,\&\,x = a]$

G4′. $\exists x\,[(\pi(x,b)\,\&\,x = a)\,\&\,\forall y(\pi(y,b)\,\&\,y = a \rightarrow y = x)\,\&\,x = a]$

The Substitution Principle does not get us from G3′ to G4′ because it does not apply, since the descriptions that are substituted do not occur.

It is not necessary to adopt Russell's theory to avoid the substitution principle, however. It's only necessary to think carefully about truth conditions. If one thinks of designata of sentences as complexes of properties and objects, as Barwise and I were doing, there is an obvious distinction to be made. Consider C1 and C2. Which properties, relations and objects are involved in the truth conditions of C1? Is it Scott twice over and identity? Or Scott, identity, authorship, and the novel *Ivanhoe*? If we take C1 and C2 the first way, they can be thought of as having the same truth conditions. But if we take them the second way, they do not. A condition of C1′s truth is that Scott wrote *Ivanhoe*, while this is not a condition of C2′s.

The situation will be a bit clearer if we shift examples. Consider the following two sentences:

(11) The author of *Tom Sawyer* grew up in Missouri

(12) The author of *Huckleberry Finn* grew up in Missouri

Do (11) and (12) have the same truth conditions? From one point of view, we might say that they do. The same fact, that Mark Twain grew up in Missouri, makes each of them true. From another point of view, it seems that they do not. For (11) to be true, someone needs to have both written *Tom Sawyer* and to have grown up in Missouri. But this could be true, while (12) was false, and vice versa.

Barwise and I said that there were two ways of building up facts from sentences like (11) and (12), depending on whether one took the descriptions as "value-loaded" or "value-free". The value-loaded interpretations are the same, complexes of Twain, Missouri and the relation of growing up in; the value-free interpretations are different. The latter each involve authorship and a novel, rather than the author.

If we take the descriptions in Gödel's slingshot as the value-free, then the slingshot is blocked at the substitution steps. We can take the designata of descriptions to be

complexes of objects and properties, and the designata of sentences to be facts or states of affairs built up out of these.

The situation is not so clear when we take the descriptions to be value-loaded. What then should be the designata of the sentences? The most natural suggestion is what we might call their *incremental truth conditions*, given the facts that determine the designation of their terms:

> Given that Mark Twain wrote *Tom Sawyer*, (11) is true iff Mark Twain grew up in Missouri.

> Given that Mark Twain wrote *Huckleberry Finn* (12) is true iff Mark Twain grew up in Missouri.

(11) and (12) agree with respect to the additional requirements they impose on the objects that fit the descriptions in them, the requirements that appear on the right hand side of the biconditionals. These incremental truth conditions can be taken as facts or states of affairs involving the described object—Mark Twain in this case — rather than the descriptive complexes. This proposal we can summarize as follows:

Expression	Designation	
	Value-free reading	*Value-loaded reading*
Description	Descriptive Condition	Object described
Sentence	Truth conditions: State of affairs involving descriptive condition	Incremental truth conditions: State of affairs involving object described

The principles we adumbrated earlier need to be modified:

(**B′**) Substitution of basic terms that co-designate do not affect the truth conditions of a sentence; substitution of descriptions does not effect the incremental truth conditions of a sentence, but may effect the truth conditions.

*Substitution′***:** (From (A) and (B′)) Substitution of basic co-designating terms does not effect what a sentence designates. Substitution of co-designating descriptions does not effect what a sentence designates on a value-loaded reading.

(Picking any reasonably coherent notion of truth conditions and sticking with it will lead to basically the same modification.

We might take the truth conditions of a statement to correspond to the models in which it comes out true. A model assigns an appropriate extension to each name and predicate in the language. G3 and G4 clearly do not pass the test of being true in the same models. They will both be true in the model that reflects the actual world (given our assumptions). In this model the object named by a will be a member of the extension of ϕ, so G3 will be true. The pair of objects named by a and b will be a member of the extension of π, so G4 will be true. But there will be plenty of models in which one of these assumptions is true but not the other, and so there will be plenty of models in which G3 is true but not G4. On the other hand, if we restrict ourselves to the models in which the assumptions $\phi(a)$ and $\pi(a, b)$ are both true both G3 and G4 will be true.

The substitution principle is also undermined by the propositions of possible worlds semantics. Consider the initial statement in Church's argument. Are we to take Ivanhoe as part of the subject matter or not? If not, we get the set of all possible worlds (or all possible worlds in which Scott exists) as the designation of C1. If we take writing Ivanhoe to be part of the subject matter, we get the set of worlds in which Scott wrote it. These are quite different sets of worlds.)

4   The Modified Slingshot

Given these principles we can construct a modified version of the slingshot that purports to show that the lower right hand box of our diagram cannot really be the incremental truth conditions, but must be simply truth values. That is, if we give the descriptions in a sentence their value-loaded reading, we are forced to take the sentence to designate truth values rather than incremental truth conditions.

The modified slingshot purports to show that the incremental or value-loaded designata of all true sentences with descriptions are the same. Let $\iota x[\phi(x)]$ and $\iota y[\Psi(y)]$ be distinct objects and F and G be distinct properties such that it is true that $F(\iota x[\phi(x)])$ and $G(\iota y[\Psi(y)])$. Give all of the sentences in the following sequence a value-loaded reading.

M1.	$\mathrm{F}\iota x[\phi(x)])$	Assumption
M2.	$\iota x[\phi(x)] = \iota x[\phi(x) \text{ and } \mathrm{F}(\mathrm{x})]$	Redistribution
M3.	$\iota x[\phi(x)] = \iota x[x \neq \iota y[\Psi(y)]\& x = \iota x[\phi(x)]]$	Substitution]]
M4.	$\iota y[\Psi(y)] = \iota y[y \neq \iota x[\phi(x)] \text{ and } y = \iota y[\Psi(y)]]$	Redistribution
M5.	$\iota y[\Psi(y)] = \iota y[\Psi(y) \text{ and } G(y)]$	Substitution
M6.	$\mathrm{G}(\iota y[\Psi(y)])$	Redestribution

Given our original redistribution principle and the revised substitution principle, M6 should have the same designation as M1, if both are given a value-loaded reading. To block the modified slingshot, we need to turn to the redistribution principle.

5   Truth Conditions and Subject Matter

In "Semantic Innocence," Barwise and I associated the faults of the redistribution steps with the problem that I have elsewhere called "losing track of subject matter,"[8] which affects both the model theoretic and possible worlds conceptions of truth conditions.

All logical truths are logically equivalent; if we take logical equivalence as a criterion for sameness of truth conditions, they will all designate the same thing according to (A). For example (11) and (12)

 (11) Mary is sitting or Mary is not sitting.

 (12) Peter is picking peppers or Peter is not picking peppers.

are each true in all models for a language that contains both sentences. So, on the logical equivalence criterion, (11) and (12) have the same truth conditions.

Similarly, if we take necessary truth as our criterion of sameness of truth conditions, (11) and (12) will designate the same thing by principle (A).

Given some fairly plausible assumptions, this means that neither of these conceptions of truth conditions support the notion of truth conditions being *about* a particular object. Consider the following sequence of sentences:

 P1 Peter picked a peck of pickled peppers.

 P2 Peter did not pick a peck of pickled peppers.

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[8]In Perry, 1989

P3 Peter picked a peck of pickled peppers or Peter did not pick a peck of pickled peppers.

P4 Mary is sitting and (Peter picked a peck of pickled peppers or Peter did not pick a peck of pickled peppers).

P5 Mary is sitting.

Intuitively the truth conditions of P1 are about Peter, since it mentions him and predicates something of him. It seems that if the truth condition of S are about Peter, those of ∼ S should be too, so P2 is about Peter. If the truth conditions of S and those of Q are both about an object, it seems that those of S*or* Q will be about that object, so those of P3 are about Peter.[9] It seems that if the truth conditions of S are about an object, those of Q *and* S will be about that object, so those of P4 are about Peter. But P4 is logically and necessarily equivalent to P5, so on the conceptions in question, P4 and P5 have the same truth conditions, so those of P5 are about Peter. But this means that the concept of being *about*, on these conceptions, is essentially empty.

The fact that the model theoretic and possible worlds conceptions of truth conditions lose track of subject matter in this way raises problems in many areas, such as semantics of attitude reports.[10] In "Semantic Innocence" Barwise and I diagnosed the slingshot as another place where losing track of subject matter leads to problems. We were mainly concerned with Davidson's versions of the slingshot; he often justifies the redistribution steps by appeal to the logical equivalence of the sentences in question. We also saw the logical equivalence criterion in the background of Church's discussion although he does not appeal to it. Barwise and I criticized logical equivalence as a criterion of sameness of designation, on the basis of considerations like those adumbrated in the last few paragraphs, and on this basis, rejected redistribution steps.

Olson points out that this does not really get to the heart of the issue of redistribution steps.[11] The argument Gödel uses does not rely on the logical equivalence criterion, but on a specific and intuitively plausible claim that two sentences have the same content. The pairs of sentences in the Gödel slingshot that are linked by redistribution steps, such as G2 and G3, do not seem to involve any dramatic changes in

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[9] As Olson points out (Olson, 1987, p 85), Wittgenstein's doctrines in his Tractatus do not agree with this, since he didn't think that tautologies had any content at all. See also Partee, 1989.

[10] See Partee, 1989 and Perry 1989.

[11] Olson, 1987, pp 85 ff.

subject matter of the sort that the logical equivalence or necessary equivalence criteria permit. So, one can suppose that the criteria of logical or necessary equivalence are too strong for sameness of designation of sentences, while still supposing that redistribution is a correct principle. Indeed, this was presumably Frege's view at the time of the *Begriffschrift*. His carving up content principle would support the principle of redistribution, but he did not claim that all necessary truths or all logical truths had the same content.[12]

6   Truth Conditions and Redistribution

Consider G2 and G3. They are logically and necessarily equivalent, so by these criteria of sameness of truth conditions, they will designate the same object. But this does not seem to turn on losing track of subject matter. G3 brings in new logical apparatus, the definite description operation and the identity sign, but no new terms for objects, properties or relations (other than identity, arguably a part of the logical apparatus).

Olson points out that taking sameness of fact as our criterion does not deliver such a clear answer. Can we really distinguish between the facts described by G2 and those described by G3? The question forces us to recognize two different conceptions of facts, with different criteria of identity. According to what Olson calls the "existential" conception, facts are identical if they necessarily co-exist, while on the "structuralist" conception, they are individuated by sequences of properties and objects.[13] The existential conception supports redistribution, and seems to leave us with no obvious way out of the modified slingshot.

The spirit of the structuralist conception is contrary to principle (C) and to redistribution, and certainly allows one to block the slingshot. Where $a = \iota x[\phi(x)]$, a natural structuralist representation of M1 and M2 might be as follows:

$$\langle F, a \rangle$$
$$\langle =, a, a \rangle$$

(Remember that we are dealing only with value-loaded readings). For the structuralist, we have two quite different facts designated, with different structures.

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[12]See Weitzman, 1989 for a discussion of Frege's "carving up content" principle.

[13]Olson, 1987, pp. 91ff.; Olson's distinction and terminology is derived from Kit Fine's distinction between structuralist and empiricist conceptions of facts in Fine 1982.

Olson is clearly sympathetic to the existential concept of facts, and to the charge that the structuralist conception improperly mixes metaphysics and syntax. He also thinks the fine-grained structuralist conception of facts will be susceptible to a sort of metaphysical slingshot inspired by Bradley.

7   The Metaphysical Slingshot

Olson's conclusion is not quite that that there is only one fact on the structuralist conception, but rather than any fact necessitates every other. Here is what Olson says:

> It seems to me that the structuralist approach is exposed to objections of
> the sort that Bradley made against Russell. For it holds that an object a
> has the property F if and only if there exists a fact whose constituents are
> a and F. Bradley's question was what manner of thing a could possibly be.
> Is it an ordinary thing, replete with all its properties and relations to other
> things? If so, how can its having F consist in its being the constituent
> of a fact of which F is another constituent? Its identity as a constituent
> depends on its properties, including F. Moreover, a is supposed to be the
> same in each of the facts of which it is a constituent. If the fact that a has
> F is determined by its constituents, and a, which is one of them, has the
> property G, how can this fact be compatible with a's not being G? It is true
> that distinct facts can necessarily coexist according to the structuralist. But
> since G can be any property of a, he now appears to be committed to what
> James called "the Block Universe." Each fact that exists is incompatible
> with any state of affairs that does not exist. For the state of affairs of
> a's not being G would have as a constituent a, an object which is G. The
> structuralist could meet this objection by taking a as a "bare particular,"
> but I do not think that Bradley would be alone in regarding this as a form
> of theoretical suicide.[14]

This is pretty succinct. Let's see if we can spell it out a little. We'll just consider simple facts, involving an object having a property or a sequence of objects standing in a relation. I'll assume that there are both positive and negative facts; for example, there

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[14]Olson, 1987, pp. 99-100.

is the fact that I am sitting, and the fact that I am not standing. And I'll use *states of affairs* for fact- like things that are not facts. So my sitting and my not sitting are both states of affairs–I'll call them opposites–and one is a fact. A very basic metaphysical principle is that of two opposite states of affairs, one and only one is a fact.

Suppose that f is the fact that I am sitting, and f′ is the fact that I am from Nebraska. Then, since I, as a member of f, am replete with all my properties, the first fact somehow contains the second. According to what I shall call Olson's principle, f is incompatible with the opposite of f′. Then, by the basic metaphysical principle mentioned above, f necessitates f′. And by parity of reasoning, f necessitates every other fact with me as a constituent. If we suppose that every object stands in some relation or other to every other object, and that every fact has some object as a constituent, we get the result that f necessitates every fact. So, given Olson's principle, this conception of facts seems to lead to something quite aptly called a "Block universe".

What about Olson's principle? To make it plausible, I think we need to make two assumptions about Olson's intentions. First, we need to assume that G is supposed to be an essential property of me. Only the facts essential to my existence are necessitated by facts with me as a constituent. Arguably, I would not be me, unless I had the very parents that I had. So any fact with me as a constituent, necessitates the fact that I have the parents that I do. But then, it seems, all sorts of facts about parentage are going to be necessitated, about the parents of my parents, and their parents, and so forth. We seem to have not so much a block universe as a sort of lace universe, with the fact that I am sitting necessitating an odd assemblage of facts back to facts about Adam and Eve and Cain or Abel and the like, but with lots of unnecessitated holes of random size and shape in between. But the lace universe is enough of a problem for the structuralist theory of facts.

The second assumption we need to make about Olson's intentions is that he is assuming that facts are the basic building blocks of one's ontology. On this idea, objects must derive their existence and identity from the facts in which they are involved. To then individuate facts in terms of objects, as the structuralist proposes to do, seems to be ruled out. If one is thinking of the objects "replete with their properties," prior to facts, then facts are not basic. If one is thinking of the object as bare particulars, then one surely is committing theoretical suicide, since now it is these bare particulars that are ontologically basic.

8   Facts and Situations

I want now to describe a view that rejects this second assumption. This is the view in *Situations and Attitudes,* although we chose in that work not to reflect the whole view in the formal apparatus.[15] More recent versions of situation theory incorporate the entire view into the formal apparatus.16 This view takes something like Olson's existentialist view about situations, but his structuralist view about facts. I then consider a problem for this view related to the metaphysical slingshot, and suggest a solution to the problem.

First let's adopt a little notation and terminology. By a scheme of individuation and classification I mean a domain of individuals together with a domain of relations. Where R is an n-ary relation and $a_1,...,a_n$ is an appropriate sequence of objects, I shall call R,$a_1,...,a_n$ an issue and an issue together with 1 or 0 a state of affairs. A scheme of individuation determines a set of issues.

R,$a_1,...,a_n$;1

is the state of affairs that is a fact if and only if $a_1,...,a_n$ stand in the relation R, while

R,$a_1,...,a_n$;0

is its opposite, the state of affairs that is a fact if and only if $a_1,...,a_n$ do not stand in the relation R. A basic metaphysical principle is that a state of affairs is a fact if and only if its opposite is not one. But what determines which states of affairs are facts? One answer might be that this is bedrock. Some just are, some are not. This is not my view, however. It seems to me that we have a notion of a reality or realities that might be individuated and classified in different ways, according to different schemes of individuation. Imagine a checkerboard, for example. We could individuate it as sixty-four squares, and classify them with the properties of being red and black, and the relations of directly under and directly to the right of. Or we could individuate it as eight rows and eight columns, and classify them in terms of the relations of being red at and being black at, being under and being to the right of. There are two different ways of getting at the same reality. I want to say that the checkerboard can be considered as a situation, which, given one scheme of individuation and classification, determines some states of affairs to be facts, and given another, determines other states of affairs and facts. Reality transcends any one scheme of individuation.

On this conception, then, facts are not basic entities from which the world is con-

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[15]See Barwise, 1989.

structed, but more like the accurate measures of situations, relative to a standard of measurement. Being a fact is really a derivative property. Instead of the fundamental property of being a fact, we have the fundamental relation of being determined to be a fact by a situation.

s $\models \sigma$

is read "situation s makes state of affairs σ factual."

Where $\sim \sigma$ is σ's opposite, two plausible principles are:

a) If s$\models \sigma$, then not: s$\models \sim \sigma$

b) If there is an s such that s $\models \sigma$, then there is no s$'$ such that s$'$ $\models \sim \sigma$.

a) says that no situation makes a state of affairs and its opposite factual; b) says if one situation makes a state of affairs a fact, no other situation can make its opposite a fact.

A third plausible principle (persistence) is:

c) If s is part of s$'$ and s $\models \sigma$, then s$'$ $\models \sigma$.

The principle that there is a world we could express this way

d) There is an s such that for all σ, s $\models \sigma$ or s $\models \sim \sigma$

The world is not the totality of facts, but something from which the objects and relations that are used to construct states of affairs–both the facts and the non-facts–are abstracted. The additional situations I have in mind are not alternative realities to the actual world, but parts of it. We could speak, for example, of the situation in this room during the present hour.

9   Individuating Situations

Looking at things this way, it seems unproblematic to individuate facts in terms of their constituents. But what of situations? How do we individuate them? Unless we answer this question, can we even give an answer to the question of whether there is really more than one?

In our book *Situations and Attitudes*, Jon Barwise and I used the term "situation" both for what I am calling situations and for what I am calling states of affairs. We

called the former "real situations" and the latter "abstract situations." Among abstract situations, we distinguished between factual and non-factual. So factual abstract situations were what I am calling facts or sets of them.

One can distinguish between the internal and the external properties of situations. The internal properties are which states of affairs they determine to be factual. An example of an external property is being perceived by a person at a certain time. Another is leaving a certain issue open, being "undefined". Given principle a) above, one would know that s is not identical to s′ if s determines σ to be a fact and s′ determines $\sim \sigma$ to be a fact. But given principle b), this test will never apply.

However, if one thinks that situations have not just fact-determining role, but a fact-constitutive role, there will be lots of ways of individuating them. It is natural to take situations to be the constituents of facts involving perception, causation, and the like.

I want to briefly explore a certain problem related to these two roles for situations, related to the issues Olson raised. Basically the problem is that situations that are big enough to determine states of affairs to be facts are too big for most of the fact-constitutive uses for situations. Consider the fact that I am sitting (as I write this). How big does the situation have to be, that determines this to be a fact? At first glance, one would think that the situation in the room, at the present time would do it. That situation includes everything that is going on in the room at that time. Is that not enough to settle the issue of whether I am sitting or not?

At second glance, it does not really seem big enough. Let's go back to the checkerboard for an analogy. Consider the fact that row 2 is red at column 2. At first glance, it seems that just the situation at square 10 is what settles this issue. But at second glance, this does not seem right. That little patch could have been red, even if there were no rows or columns, or not the ones that there are. That patch could have been part of a board that was not suited for checkers at all, in which geometrical shapes of various colors shapes and sizes lie adjacent to it in a random way. Given the rest of the board, which guarantees the existence of the row and column and question, what goes on at that square is what settles the issue of the color of row 2 at column 2. But what goes on at square 10 does not settle it all by itself, because what goes on at square 10 does not suffice by itself to establish the existence of the column and row that are constituents of the fact.

In a way, that fact that square 10 is red, and the fact that row 2 is red at column 2, seem like the same fact. But they are not, since they have different constituents. And it

is only the former fact, not the latter, that is really settled by what goes on at square 10.

The situation in the room seems similar. Just as the column and row "transcend" the square, and are not established to exist just by what goes on in the square, so I transcend the situation in my study. In some sense, things could be just as they are here, and I not exist. We do not seem to be able to find that possibility, so long as we "measure" the situation with the scheme of individuation with persons in it. But if we think in terms of "person-stages", or in terms of rooms and their properties (there is a person of such and such a type writing in this study at this time) we can find them. It seems that what is going on in this study now, the situation in this study, could be fit into various larger situations.

How large will the situation have to be, then, that settles the fact that I am now writing? It seems it will have to stretch back far enough to establish my existence. But perhaps it will have to stretch even further than that. The problem of the lace universe reasserts itself at the level of situations.

The solution to the problem, I believe, is to grant it. The situations which establish the ordinary facts we are interested in may have to be quite large. This does not show that there are no smaller situations, however, just that the smaller ones, the ones we perceive and the like, do not establish quite as much as we thought they did.

The right way to look at it, I think, as roughly as follows. The small situations we perceive, examine, and the like do not establish the facts we are interested in by themselves. They establish them only relative to other facts. The key relation is not "determines to be factual," but "determines to be factual given certain facts". This has to do with the incrementality of situations. I want to know what the situation in this room supports about a certain filing cabinet, a certain typewriter, a certain person. I identify these individuals not by being privy to all of the fact that determine their identity, but by being in a relationship with them.

So, I suspect, the notion we need is that of *incrementally determines to be a fact*. That is, s $\models \sigma$, given σ'. I will end on this somewhat indecisive and incomplete note.

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