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RELATIONS – THROUGH THICK AND THIN

> No part of philosophy has been set out more completely and with more care, or rather, no part of philosophy has been more definitively established than the theory of relation.?
>
> William Hamilton (1870)

1. RELATIONS BEFORE AND AFTER RUSSELL

The discovery of the logic of relations, which we owe to de Morgan, Schröder, Peirce, Frege and Russell, transformed the face of philosophy. It is just that, the logic of relations, of all relations. Whatever terms you countenance,

> things, people, numbers, virtues, tropes, universals, masses, possibilia, arbitrary objects, incomplete objects, fictitious objects, holes, waves, objects beyond being and non-being,

and whatever relations you countenance,

> external, internal, grounded, relations as universals, relations as tropes, mind-dependent relations, mind-independent relations, simple relations, complex relations, social relations, kinship relations, psychological relations,

the logic of relations gives you the logic of your relational propositions and their formal properties.

A little noticed feature of the revolution was the prominence accorded to a certain type of relation which seems to have enjoyed little attention before the discovery. Russell, in particular, seems to have been responsible for the shift in the diet of examples that have come to nourish philosophical reflexion on relations. By dint of repeated and successful propaganda, Rus-

sell drew philosophers' attention to the category of *singular, contingent, thick relational propositions*, such as

> *a* killed *b*
> *a* loves *b*
> *a* gives *b* to *c*

and so, too, to that of their truth-makers. In what follows I shall document the transition somewhat sketchily in order to formulate a thesis which can be attributed to Russell. Roughly, the thesis has it that there are irreducibly thick relational truth-makers.[1] I then mention some arguments which, if successful, throw doubt on Russell's thesis that there are thick relations, the sort of thing which would make true contingent, thick relational truth-bearers. There *are*, of course, irreducibly relational entities; relations cannot be reduced, as Russell showed, drawing on some fundamental features of relations which the logic of relations had brought to light, their order properties. But there are, the suggestion goes, no irreducibly thick relations. If correct, this amounts to a vindication of a view near the heart of the pre-Russellian philosophy of relations, but a vindication that detracts not a jot from the discovery of the logic of relations nor from the claim that relations are irreducible.

My description of Russell's discovery contains only one unfamiliar expression – 'thick'. What is a thick relation?

Consider the following monadic predications: "Sam is happy", "Sam is a man", "Sam is an object". There is, intuitively, a difference between being happy or being a man, on the one hand, and being an object, on the other hand. Relying for the moment on this intuition, I shall say that predications of the first sort use thick predicates and that predications of the second sort use thin predicates. Consider, now, the following two series of relational predications:

> Sam loves Mary
> Sam prefers Mary to Erna
> Edinburgh is to the north of London
> Mary hits Sam
> Mary is married to Sam
> Mary is happier than Erna

Sam is Mary's lover

Happiness inheres in Sam
Sam exemplifies happiness
3 is greater than 2
Orange is between red and yellow
Mary resembles her father
P entails Q

Here, too, there is an intuitive difference between relational predicates that are thick – the first series – and those that are thin - the second series. I shall rely, for the moment, on an *entirely intuitive* distinction between thick and thin relational predicates, concepts and truth-makers. Although many would, I hope, divide these examples up in these two ways, there are cases where intuitions differ, for example:

The leaf is part of the plant
The leaf occupies region r

In Section 4, I shall try to put the distinction on a firmer footing and consider, in turn, glosses of the thin-thick distinction in terms of the *topic-neutral/topic-partial*, *formal-material* and *internal-external* distinctions. The thesis I want to explore is this: *suppose that there irreducibly relational predications involving irreducibly "thick" concepts. Then what makes these true involves no thick relational universal or trope. Rather, the relevant truth-makers are only thin relations and monadic tropes or properties and their bearers. Although no account is forthcoming of what thin versus thick relations (or concepts) are in general, all the thin relations I appeal to can be characterised as internal relations.* My exploration of this thesis is speculative only, for at least two reasons. First, a defence of the thesis would amount to defending an entire metaphysics. I shall therefore only be pointing to arguments in the literature which, if successful, would support the thesis. Second, the thesis I explore is intended to throw some light on differences between theories of relations before and after Russell. But no detailed work on the history of the philosophy of relations is presented in what follows.

Did philosophers before Russell standardly focus on the category of thin relations?

2. ON THIN, PRE-RUSSELLIAN RELATIONS

Aristotle talks of relatives rather than relations. Irwin (1990, p. 74, cf. 511) summarises his views as follows:

A relative is essentially "of" something else that is its correlative (e.g. double and half, big and small, master and slave) ... It will not do to say that a rudder is of a boat or that a wing is of a bird; we must say that the correlatives are the ruddered and the winged (*Catg.* 6b36-7a22). This correlativity applies to descriptions, not to the existence of the things described. Knowledge and the knowable, perception and the perceptible are correlatives, but the knowable and the perceptible can exist without being known or perceived. (7b15-8a12)

In terms of the language of properties one of the claims might be put as

> Masters and slaves are correlatives.

The property of being a correlative is a thin property. In the language of relations, the claim might be put as follows:

> Masters require slaves and slaves require masters.

This can be glossed as:

> If something is a slave then something is a master & if something is a master then something is a slave.

But "require", here, might also be thought to refer us to relations of existential dependence between substances under descriptions (what we will call below "generic dependence") rather than to logical relations between propositions. If "require", "depend on", "correlated with", and "entail" are relational predicates, they are thin predicates.

The real categorical relations – as opposed to relations of reason – studied by Aquinas are:

> relations whose foundations are quantity,
> – equality, inequality, whiter than, less hot than
> relations whose foundations are action and passion or active and
> passive potencies
> – the relation between what heats and what is heated

He is said to have considered these to be correlatives or mutual relations in the sense of Aristotle (cf. Henninger 1989, Chap. 2).

Hobbes calls only sameness and difference, similarity and dissimilarity relations (*De corpore* p. II, XI, §3). Locke begins by calling relations ideas

"the mind gets from . . . comparison" but also says a relation is "a way of comparing or considering two things together" (*Essay*, II, Chap. XXV). He says that relation is not contained in the real existence of things but is something "extraneous and superinduced". He lists many examples of "correlatives":"*father* and s*on*, *bigger* and *less*, *cause* and *effect*". When he says that between such relative terms there is a "reciprocal intimation" and talks of "that evident mark of relation which is between correlatives, which seem to explain one another, and not to be able to exist but together" he seems to have in mind the thin relation of requirement or dependence. He does, however, also say that some relations have a name and, presumably, is not thinking of the relation of dependence or co-existence. Perhaps the closest he comes to considering a thick relation is the following passage, which occurs in the context of a defence of the thesis that ideas of relations may be more perfect and distinct than our ideas of their terms and of substances generally.[2]

Thus, having the notion that one laid the egg out of which the other was hatched, I have a clear idea of the relation of dam and chick between the two cassowaries in St. James's Park, though perhaps I have but a very obscure and imperfect idea of those birds themselves. (*Essay*, II, Chap. XXV)

Locke here, arguably, has in mind at least the following relational predicates

– laid –
– was hatched out of –
– is a dam of –
– is a chick of –
(dams) require and are required by (chicks)

Locke distinguishes not only between relations and their relata but also between these and the foundation or occasion of a relation, as when a marriage contract or ceremony provides the foundation for the relation of husband to wife. His list of relations is deliberately incomplete but nevertheless runs to: cause and effect, time, space, extension, identity and diversity (where the terms of identity are a thing at one time and the same thing at another time), (gradual) comparatives, natural relations such as kinship relations, instituted or voluntary and moral relations. As Meinong (1882, §5) pointed out, Locke's account of knowledge is actually a development of his account of relations. The four types of agreement which make up knowledge are identity and diversity of ideas, agreement between them, coexistence of ideas within one subject and agreement between real existence and ideas. Comparison and agreement, like coexistence and correlations are thin relations.

Leibniz, for whom every concept contains a relation (NE II, 25, 10), really does consider singular, thick relational propositions. But his account of these refers us to a thin relation (or concept or property):

> *a* loves *b* iff
> *a* is a lover insofar as *b* is loved (cf. Mugnai 1992).

At §9 of *Begriffsschrift*, Frege discusses the following examples:

> Hydrogen is lighter than carbon dioxide.
> Oxygen is lighter than carbon dioxide.
> Nitrogen is lighter than carbon dioxide.
> Cato kills Cato (cf. Section 3).

Frege says that the result of substituting "oxygen" for "hydrogen" in the first example, or "nitrogen" for "oxygen" in the second example is that

"oxygen" or "nitrogen" [sic] enters into the relations in which "hydrogen" stood before. If we imagine that an expression can thus be altered, it decomposes into a stable component, representing the totality of relations, and the sign, regarded as replaceable by others, that denotes [bedeutet] the object standing in these relations. The former component I call a function, the latter its argument. The distinction has nothing to do with the conceptual content, it comes about only because we view the expression in a particular way.

It is not clear here just what the relation between a totality of relations and a function is supposed to be. But it is clear that Frege here calls a relation what is sometimes today called a "relational property", for example, *being lighter than carbon dioxide*. In other words, when Frege talks here of an object standing in a relation, he is not thinking of hydrogen standing in the relation of being lighter than to carbon dioxide, but rather of hydrogen's being lighter than carbon dioxide.[3]

Frege notes in §9 the existence of such correlatives as *heavier-lighter*, *give-receive* and active-passive. But, unlike so many of his predecessors, he is interested here in the category of singular, relational, thick truth-bearers, not in general claims to the effect that if someone gives then someone receives, etc.

At §70 of the *Grundlagen* Frege moves closer to the way of talking of relations to be popularised by Russell, to wit, as something between things (but not, of course, to Russell's account of what a relation is):

By detaching *a* and *b* from a judgeable-content that deals with an object *a* and an object *b*, we obtain as a remainder a relational concept [Beziehungsbegriff], which is accordingly doubly in need of completion. (cf. *Grundgesetze*, §4)

He goes on to contrast this way of parsing

The earth has greater mass than the moon

and the two parsings that yield the concepts "having greater mass than the moon" and "having smaller mass than the earth".

The individual couples of coordinated objects stand in the same way – one could say, as subjects – to the relational concept as the individual object to the concept under which it falls. The subject here is a composite subject [ein zusammengesetztes][4]

> Thus the relational concept belongs like the simple concept to pure logic . . .
> Just as
> "*a* falls under the concept F"
> is the general form of a judgeable content which deals with an object *a*, so one can take
> "*a* stands in the relation ϕ to *b*"
> as the general form for a judgeable-content that deals with the object *a* and with the object *b*.

This passage contains an early, purely general formulation about the logic of (binary) relations and its relation to the logic of monadic predicates. It also touches on a topic central to what follows. For Frege notes here that the logical form of relational concepts is to be distinguished from "the particular content of the relation". "Falling under" is a "logical relation" (cf. Russell, PoM, §53).

I said that it is not clear what the relation between a 1879 Fregean function and relations is supposed to be. It is not clear, to me at least, what the relation is supposed to be when functions become unsaturated, semantic values. But Russell is right to say that Frege "regards functions . . . as more fundamental than predicates and relations" (PoM 505). For as Frege says in 'Funktion und Begriff', a relation is a function whose value is always a truth-value; of a function whose values are numbers he says, "We shall therefore not call this a relation". Given the assumption that relations are functions, it is understandable why Frege would want to deny that every function is a relation. Semantics, he thinks, is prior to ontology.[5] It is less clear, to me, why Russell (ibid.) so readily agrees with Frege.

Russell is quite clear about the fact that in his *Leibniz* and in *The Principles of Mathematics* and elsewhere he has noted something that philosophers have often overlooked:

Even among philosophers, we may say, broadly, that only those universals which are named by adjectives or substantives have been much or often recognized, while those named by verbs and prepositions have been usually overlooked. (Russell 1986, PoP, 54)

As he had put it in PoM (§48), "concepts...indicated by verbs...are always or almost always relations"; "all verbs, except perhaps *is*, express relations" (heading of §53). He argues there, too, that there are no relational tropes:

"relations do not have instances, but are strictly the same in all propositions in which they occur " (§55) and, later, that there are no monadic tropes. Transitive verbs - whatever we think of Russell's view of intransitive verbs (cf. PoM, §48)) – standardly express thick relational concepts. Russell's example is "Felton killed Buckingham" (§52).

Although Russell focussed philosophical attention on singular, thick relational facts, his own systems, like those of Nicod, Carnap and Goodman etc, are, of course, characterised by a heavy reliance on thin relations, similarities of different kinds, equivalence relations etc.

The type of singular, thick, relational proposition that Frege and Russell brought to the attention of philosophers owes its discovery in large measure to the adoption by these philosophers of a new way of parsing singular propositions. So perhaps the natural prominence enjoyed by thin relations in the tradition is connected with the divinisation of the copula and the failure to distinguish sufficiently between proper and common names.

3. ON DOING WITHOUT THICK RELATIONS

Philosophical claims to the effect that entities of a certain sort are superfluous, can be dispensed with or got rid of are often claims to the effect that one type of entity can be reduced to another type. The thesis I want to explore could indeed be presented in this way. It would involve arguing that there are thick relations but these can be constructed out of thin relations and monadic properties. This is indeed the view I incline towards. But the philosophy of reduction and of analysis is a complicated matter. I shall therefore adopt a different, slightly less (?) controversial strategy, which may be introduced with the help of a familiar example:

It is clear that

Sam is tall

has the surface, grammatical form of a monadic predication. For those of us who believe that such a predication has a truth-maker it is apparent that the truth-maker of this predication is a relation.[6] Just what the other term(s) of the relation is (are), is by no means clear. But whatever makes the predication true is surely the obtaining of a relation between Sam and something else. If that is right, then the grammatical form of the predication and the form of its truth-maker come apart. The real truth-maker is not that suggested by the gramatical form of the truth-bearer, the possession by Sam of a monadic property.

In a roughly analogous way, the applications of the thesis I want to examine will all take the form of a claim to the effect that the use of a thick, relational predicate misleadingly suggests that the relevant truth-maker involves a thick relation. The truth of the matter is that, in every case, the real truth-maker is a thin relation. In what follows, this is what is meant by "doing without thick relations". Claims of this type are independent of, but usually compatible with claims to the effect that the logical form of some truth-bearer is not what it seems to be[7] (that, for example, "Sam is tall" is really of the form "Sam is taller than").

There are at least two familar ontological accounts of thick relations and thick monadic properties. There is the view that these are universals and the view that they are tropes. The first view is that of Russell (1986). On his variant of the view, relational and monadic universals need not be exemplified. On another familar variant of the view, monadic properties and relational universals are always exemplified (Armstrong 1989; Tegtmeier 1992; Johansson 1989). All these philosophers allow for both thin relations such as identity or similarity and thick relations such as love.

The second view has been defended by more than one philosopher and even by the early Russell. According to this view, a particular, relational hit – at least one – connects Mary and Sam if it is true that she hits him. This hit is numerically distinct from every other hit, whatever relations of resemblance there are between it and these. Thus, suppose that

> Erna saw Mary hit Sam.

Then the view that relations are tropes together with a familiar style of analysis for naked infinitives combine to suggest that there is at least one episode of hitting which is seen by Erna, of which Mary is the agent and Sam the victim and which depends on Mary and Sam. This episode is a thick relational trope.[8]

According to Henninger (1989 4), the "principal assumption of the late medieval controversy over relation is that a real relation is an Aristotelian accident",[9] that is to say, if one traditional interpretation of Aristotle is right, a relational trope. But the real relations discussed seem to have been mainly thin relations – 'Relation als Vergleich', as the title of Schönberger's (1994) recent study of Buridan's theory of relations in its scholastic context, puts it.

Of course, contemporary friends of relational tropes also worry about whether thin relations are tropes or, as Russell urged, universals, or, as Husserl urged, both, or neither universals nor tropes.[10] But their endorsement of thick relational tropes sets them apart from many of their medieval predecessors, as far as I can see. One important distinction that makes

this endorsement possible is that between inherence and dependence. If inherence is taken to involve some sort of (mysterious, Aristotelian) part-whole relation, if Sam's sadness trope is said to be in Sam in some way, then if relational tropes are to be allowed in addition to monadic tropes, the following worry is natural. Is the relational hit in Mary, in Sam, in both? Since the natural reply to this, that of Ibn Sina[11] and Leibniz, is that an accident cannot be in two substances, the temptation is to deny relational tropes or to make them out to be mental entities (comparings). But, an alternative strategy would be to point out that inherence involves, in addition to *being in* or perhaps only, the relation of dependence, a non-mereological relation. A monadic accident or trope depends one-sidedly on a substance. If this is plausible, then a further extension of the idea would be the claim that a particular hit depends both on Mary and Sam although it is not in either and not in both.

The notion of dependence being appealed to here is distinct from that at work in traditional discussions of correlatives. It is the notion of individual (token, specific as opposed to generic) dependence, a relation holding between particulars. This notion is indeed present in the tradition, in many accounts of inherence, as when it is claimed that a particular accident depends on a particular substance. It may be understood in strongly modal terms, or as a primitive non-modal notion.[12]

Since I believe in tropes, I shall in what follows mainly provide alternatives to the view that predications employing thick relational predicates are made true by thick relational tropes and I shall assume that there are monadic tropes. But the suggestions translate easily into criticisms of the view that such predications are made true by thick, relational universals. Since I am a nominalist I shall, in what follows, presuppose that everything except space and time is in time. A further presupposition should be made explicit. I shall be concerned in what follows only with the metaphysics or ontology of naive physics. But in Section 4, I shall be obliged to qualify this restriction.

The way ahead is tortuous. There is no alternative but to consider, one after another, the major types of relational predicates (concepts) and their putative truth-makers.

Comparative propositions,

> Mary is happier than Erna
> This is heavier than that

provide what is perhaps the most favourable case. The friend of thick tropes tells us that the truth-makers of such assertions are thick relational tropes, for example the trope of being happier than, which depends on Mary and on Erna, in that order. On this view, surface structure is a good

guide to ontology. But there is a familar account of such predications which tells us that their truth-makers are the obtainings of the relation of being greater than between two complexes or between two tropes. (Such an account may or may not add that the apparent logical form of the predicates here is misleading.) Mary's happiness is greater than Erna's happiness. According to the friend of tropes, the relation of greater than connects two psychological tropes. According to the friend of universals, it connects two complexes each of which consists of a determinate property and an individual. This type of account must provide answers to a large number of difficult questions. Is the relation of greater than a relation between tropes, quantities, quantities of tropes or of complexes of things and universal properties? Are there different types of this relation ? What is the relation between being greater than and the relation of distance between points or regions within a space (physical space, quality space, happiness space etc.)? Between these and relations of (dis)similarity? Arguably, all these questions need to be answered before the project of introducing numerical measures can begin. But it is already clear that if these questions can be answered then it will be plausible to say that what makes true predications containing thick relational comparative predicates is the thin relation of being greater than holding between, for example, two tropes and the fact that two things have these two tropes. Such a thin relation is what is sometimes called a grounded or founded relation.[13]

Perhaps the most frequent type of relational predication in ordinary language involves *social predicates*:

> Sam is married to Mary.
> Sam interrogated Mary.
> Ireland beat France.
> The Christian and the Social Democrats voted for the Belgian Empire.

Unless we are tempted by one or other holist account of social facts, we shall follow Hayek and Searle in treating every social fact, every social property and relation as the product of intentionality, indeed as entities that are kept in existence by intentionality. The general schema is already present in Locke's account of "instituted" relations as "depending upon men's will, or agreement in society" (*Essay* II, xxvii) and is suggested by his claim that a marriage contract or ceremony is the foundation of the relation between spouses. Locke, however, does not consider the nature of thick relations such as signing a marriage contract or marrying.

Consider, first, a monadic social predication

> That is a Rector.

What makes this predication true is adherence to a convention that a certain natural object, usually a man, counts as a Rector. The analysis of the components of the convention is complicated (involving collective intentionality, the imposition of agentive and status functions, the role of what Searle calls declaratives and Reinach "Bestimmungen", etc.) as is the defence of the possibility of truth and falsity for social predications which is compatible with what is in effect an idealist theory for social objects: to be money or to be a Rector is to be thought of as such, to be subsumed under the concepts of money or Rectorhood (cf. Searle 1995, Chap. 2).

Relational, social predications certainly involve irreducibly thick relational concepts such as *ownership*, *voting for*, *being legal tender in*, *making a promise to* or indeed *ordering*. There is no temptation to see these as anything other than relational concepts. But if the individualist view is right what makes predications involving such concepts true are physical and mental facts, in particular the occurrence of intentional "acts" involving just these concepts.

Of the numerous arguments for and against such an ontology of the social world, I should like to mention one consideration which I believe has a certain subterranean importance and concerns a distinction central to this paper, although it is rarely if ever made explicit.

Properties and relations, we said, can be considered to be either universals or tropes. Tropes are usually considered to be spatio-temporal or at least temporal particulars. One part of their attraction is that they are as particular as things. This imposes an obvious constraint on the ontologist who reflects on what tropes he wants to be committed to. If you want to admit a type of trope, you had better be able to say something about the spatiotemporal credentials of tokens of the type in question. This is quite easy to do in the case of changes in things, and only slightly more difficult in the case of such changes as hits or heatings. That is why the least controversial type of tropes is furnished by changes, events, processes etc. Only ambitious friends of tropes embrace states as well.

This constraint is not felt by many friends of universals. Nor is it difficult to see why this should be the case: universals are outside time, multiply exemplifiable etc. So before you admit a given universal to your ontology you do not need to examine *its* spatiotemporal credentials. Although you may well want to investigate the credentials of the complex, state of affairs or fact containing it.

Now the friend of tropes who is prepared to countenance two numerically different but completely resembling changes of shape in two things, or two numerically different but completely resembling sadnesses is not going to admit as readily to two numerically different Rectorhoods, two

numerically different ownership relations (my relation to the 20 Fr. note in my pocket and my relation to the 100 Fr. note in my pocket) etc. Why not? Simply because such entities do not have any respectable temporal credentials.

Consider two promises. These are episodes and so are the easiest sort of temporal entity to count and individuate after things. Should a friend of tropes allow for the possibility of two promisings which are numerically distinct but resemble one another completely? No. The two episodes may involve distinct but completely resembling physical and mental tropes. These all have good temporal credentials. But there is no social trope where these mental and physical tropes are. There is nothing promisy in a promise. What makes a constellation of mental and physical tropes into a social act such as the speech act of promising is actual and potential mental episodes elsewhere. Only a commitment to unified but widely scattered tropes would allow the friend of tropes to talk of two promising tropes. The friend of unversals can, of course, talk of two distinct promisings where this is glossed as two states of affairs containing the same universal.[14]

If social predications are made true by the existence of intentionality then the next question is: is *intentionality* a thick relation? Many psychological verbs, after all, express thick, relational concepts. At least the following cases need to be considered: non-conceptual intentionality such as the intentionality of simple seeing, conceptual intentionality, such as that of thinking, judging or believing together with their propostional contents, the intentionality of desires and emotions and cases where the second term of the intentional relation is said to be a mysterious (immanent, non-existent...) object. Brentano argued from such cases to dualism. Since my concern here is to determine whether there are thick, intentional relations connecting us with the real world, I shall put mysterious intentional relations on one side.

If

       Sam sees Mary,

then it might seem obvious that the truth-maker of this claim is the relational, visual perception which connects Sam and Mary in that order. But two well-known accounts of the intentionality of perception may be held to imply that this is not the case.

On one view, the truth-maker of this claim is actually a causal relation between Sam and Mary, or more exactly, between a perceptual episode in Sam and events at Mary's surface. If the views I shall allude to below are correct, causality is not a thick relation. On another view, often although not always held to be incompatible with the first, visual perception, or

more exactly, visual content depends one-sidedly on its object. On one strong version of the view, a necessary condition for the truth of "Sam sees Mary" is that Mary is visually differentiated for Sam. Now, consider two mental states of Sam, one of these is the state he is in when he sees Mary, the other is a state of Sam which, as far as he is concerned, is qualitatively indistinguishable from the first, but which is in fact a visual hallucination – there is nothing which is such that Sam sees it. On the strong view, there is no lowest type of visual content which is such that it is instantiated by both the first and the second state of Sam. This claim is often thought to amount to a rejection of one of the presmisses of the Argument from Illusions. The strong view is the view that visual content is object-dependent. Dependence is a thin relation, so on this view, too, to see is not to stand in a thick relation.[15]

Now in fact the friend of thick relational tropes may not be impressed by the claim that the object dependence of visual content suffices to eliminate thick material tropes. For he, too, claims that visual content, like many another thick relational trope, depends one-sidedly on an agent and one-sidedly on some other object. But there is a peculiarity of visual content and of other related types of content which, I suggest, should give the friend of thick relational psychological tropes pause.

It is widely accepted by friends of mental content that psychological states and acts exhibit two features, variously called "mode", "attitude" or "quality" and "content". In the jargon of tropes, Sam's perceptual state or mode can remain numerically the same whilst the associated content varies in whatever ways are compatible with Sam's perception of Mary, as when he visually scrutinises her from different positions. What, now, is the nature of the link between mode and content? They are mutually dependent. But the dependence relations from mode to content differ from those going in the other direction. Sam's visual mode, that which makes it true that he has a visual experience rather than a visual memory, cannot occur without some visual content, but does not require any determinate content. But a determinate visual content is individually dependent on one visual mode. (A similar structure is manifested at the level of visual objects: a given shape trope must be filled by some colour, but the transition from one colour trope to another does not destroy the identity of the shape trope; change the shape, however, and the filling colour trope goes out of existence.)

This suggests that at the heart of the apparently thick psychological relational trope, seeing, there is in fact a relational structure involving only thin dependence relations. Visual experience depends one sidedly

and specifically on its subject, it depends on some visual content, which requires its mode.

So far I have considered only simple seeing of things and events and states. What of seeing that ? On one view, states of affairs can be seen without the involvement of any doxastic relation. A more common view has it that seeing that involves a doxastic relation which is based on simple direct perception:

Sam sees that Mary is jumping iff

(1)   Sam sees Mary.

(2)   Sam sees a jumping of which Mary is the agent (which depends on Mary.

(3)   Sam believes that Mary is jumping on the basis of (1) and (2).[16]

Analyses in this style serve to raise the much more general question: even if simple seeing is not a thick relational trope, are not belief and judgement thick relations? May not a judgement, and in particular, its propositional content, link a judger to the world? In other words, what sort of a relation is *conceptual intentionality*?

Perhaps conceptual intentionality is made up of a family of *sui generis* thin relations (non-natural meaning, reference, truth-making). Perhaps it is a causal relation. But if causality is not a thick relation – see below – neither is conceptual intentionality. A congenial third view is available. For verificationists and empiricists of many different stripes, many of the more basic concepts inherit their relation to the world from perception. The concept of *dog*, *tree, rabbit*,*red* – but not *teacher*, or, it is often claimed, *fragile* – have semantic values by virtue of the existence of relations of defeasible, non-inductive justification connecting predicates such as "dog" or "Hund", "tree" or "arbre" with possible perceptions, more precisely, with the contents of such possible perceptions, and related types of assertibility conditions.[17]

If this programme is plausible, one consequence is that attributions of belief and other apparently thick conceptual relations turn out to be made true by thin relations: (1) by perceptual relations, which, as we have already seen, are dependence relations and/or causal relations; and (2) by relations of justification.

What of attributions of emotions and desires or intentions which seem to be made true by thick relations of fear, regret or desiring? These inherit their intentionality from that of the cognitive states they depend on. If the relationality of the latter is of the thin variety, then the same will hold of the the relationality of the former.

Some *behavioural predicates* belong to the category of social predicates – "order", "promise", "declare". Some,

> Mary hit Sam
> Sam fled Mary,

do not. They raise a number of interesting questions for the semanticist and for the ontologist, for example the difficult question of their variable adicity.

For many a mentalist, every action belonging to the category of acts of commission, involves a bodily movement together with an intention, the mental instantiation of a certain description applying to the movement, and a variety of causal relations. Thus the truth-makers of behavioural predications will be made true by thick relations only if causality or the intentionality of intentions are thick relations. Intentions are combinations of willings or desirings (modes) and propositional contents. Above I alluded to an analysis of the intentionality of such contents which makes such intentionality out to be a thin relation. Below I shall mention accounts of causality according to which causality, too, is a thin relation.

Kinship and *genealogical relations*, what Locke called "natural relations", figure prominently in logic textbooks, where they are used to illustrate concepts such as that of a relational product and that of an ancestral. Perhaps the most central relation in this region is that of origin – as Locke, once again, notes. If Ingarden and Kripke (1993, 110ff.) are right, origin involves a strong type of existential dependence. Neither in these philosophers, nor in the literature inspired by Kripke, do we find a clear account of the terms of the relation and the entities these are bound up with or of the relations of which origin is composed - as far as I know. If Ludwig is a son of Karl Wittgenstein, then Ludwig depends on Karl. They are substances. But what dependence relations connect the relevant processes and states, coition, parturition and gestation, involving Leopoldine, Karl and Ludwig? Were a satisfactory account of such matters available, then perhaps we might say that kinship and genealogical attributions are made true by dependence relations.

On the standard view, *causality*, if it is a relation, is a relation between events, processes, episodes and/or states. It is, further, the paradigmatic example of an external relation. If e1 causes e2 then all we have is spatio-temporal contiguity plus perhaps a story about laws or regularities. Mere co-existence or co-occurrence is a thin relation if anything is.

But an increasingly vocal minority makes causality out to be more than this, to be in fact a type of necessary co-occurrence One particularly interesting version of this view, which has the advantage from point of view

of the present project, of accounting for force under the heading of causal relations, is given by Johansson (1989, 192). Two events stand in a relation of efficient causality iff

(1)   The cause is generically dependent on the effect

(2)   The effect is generically independent of but individually dependent on the cause

(3)   The (mutual) relation constituted by (1) and (2) together is founded upon qualities of the things which are related.

(4)   The effect is a tendency

(5)   The cause and the effect coincide in space and time

If either of these types of view is correct, then causality is a thin relation.

Do *occupation*, *location* and *parthood* line up with love and hitting or with dependence and entailment? As noted in Section 1, it is hard to tell. Occupation of regions by particulars, what Whitehead called the "enjoyment" of a region, is a fundamental ontological relation: occupation of spatial regions by things, occupation of temporal regions by things and the continuous occupation of space-time regions we (can) call movement (in the metaphysics of naive physics). Suppose

> a occupies spatial region r
> $[O(a, r)]$.

The friend of thick tropes will want to point out the interesting pattern of dependencies between a, r and o – the trope occupation relation which depends on these.[18]. Every physical thing depends on some O – on some trope relation of type O; every O on some thing; every O depends on some R; every R is independent of every O and every thing (as far as the metaphysics of naive physics is concerned). He might even add that every shape trope of every thing coincides with some shape trope of some R. But, he will add, although these remarks bring out the large differences between the fine structure of

> a occupies region r

and of

> a kisses b

they do not count against the view that occupation is a thick relation.

Parthood, too, he may say, is a thick relation. But if

> *a* is a part of *b*

then *a* occupies some region of space and so, too, does *b*. This suggests that if parthood is a thick relation it is so only to the extent that the associated occupation relations are thick relations. For the relations amongst regions of space are surely thin relations and the mereology of regions of space is a theory of thin relations.

Thus far, then, with the apparent exception of the relational predicate "occupies" and such relatives as "is located at", we have found some ammunition that can be used to defend the claim that every major type of thick relational predicate is made true by thin relations.

> But what is a thin relation?

4. *THIN* VS *THICK* GLOSSED

I shall consider, in turn, three possible, connected ways of unpacking the metaphors of thick and thin relations. It will be useful to bear in mind the concepts so far introduced as thin relational concepts. These are:

> identity
> resemblance
> greater than/lesser than/same as
> distance
> dependence
> entailment
> justification
> exemplification

Thin concepts are topic-neutral concepts. This gloss, which relies on a distinction due to Ryle (1954, 115f.), unfortunately does not yield an absolute distinction between topic-neutral concepts and concepts that partial as to their topics (as Ryle points out). Objecthood is about as topic neutral a concept as a concept can be. But if Frege is right his concepts are not objects. This limits the scope of numerical identity and difference as well as of resemblance. Other putative topic neutral concepts also enjoy only limited neutrality. Entailment and defeasible non-inductive justification can connect propositions of all types but not tables. Dependence relates only

temporal items. Parthood is sometimes thought to apply even to abstract entities but this is not very plausible.

If no account of thin and thick concepts of this type is forthcoming, then no account of thin and thick relations in these terms, as "meatless" or "full-blooded" as Ryle also says, is there to be had either.

Thin concepts are formal concepts, thick concepts are material concepts. This gloss, which relies on a distinction associated above all with Husserl and Wittgenstein, sounds good until we ask what "formal" and "material" mean. Let us look at some of the glosses that have been proposed.[19]

Formal concepts apply, if at all, to what is not perceptible, material concepts to what is perceptible. Presumably, "perceptible" here means "perceptible as". Certainly, disjunctiveness is not perceptible as such and redness is. I can perhaps see a disjunctive state of affairs but I cannot see it as disjunctive as I can see a red object as red. But I cannot see a neurotic as a neurotic. On the other hand, every neurotic is human and I can see something as a human.

Material concepts, unlike formal concepts, stand in determinable-determinate and genus-species relations. This is a promising start provided it can be shown that the way in which, say, *exclusive disjunction* and *inclusive disjunction* "specify" *disjunction* differs from the way in which *colour* and *tone* "specify" *sensible quality*. Certainly, all the relational concepts called "thick" above stand in specification relations to other concepts.

Formal concepts, unlike material concepts, have a logic. Or, to understand a formal concept is to grasp certain formation, transformation and inferential rules; to grasp a material concept is to grasp such rules and the concept's representational properties. Since friends of this line accept that no material concept is ever grasped unless some formal concepts are grasped, the view becomes difficult to formulate. Worse, the view presupposes that some account of the delimition of logical and other mathematical concepts is available. It presupposes that there is some sense in which there is a logic of implication or parthood and that in that sense of "logic" there is no logic of brotherhood, smells or shame. But this is notoriously not easy to defend. (On the other hand, all the thin relational concepts appealed do actually have their more or less well worked out logics.) This view has been espoused by Geach (1981, 312):

Like alternativeness, simultaneity is not a relational concept, but is one of those concepts called transcendental by the medievals, formal in Wittgenstein's *Tractatus*, and topic-neutral by Ryle; the last term is the most informative of the three – it shows that these concepts are not departmental but crop up in discourse generally.

Because of this topic-neutrality, "at the same time" belongs not to a special science but to logic; its laws are logical laws, like the so called de Morgan laws for "or".

Fortunately, the view outlined in Section 3 does not require a satisfactory account of the nature of all thin, topic-neutral, formal concepts, properties and relations. What it does require is a satisfactory account of just those thin relations employed in the development of the claim that all major types of relational predication are made true by thin relations.

In the case of *these* thin relations, to wit

> Identity
> Resemblance
> Greater than
> Dependence
> Justification

such an account can be given. *To say of these relational predicates that their semantic values are thin relations is to say that these values are, one and all, internal relations*.

What is an internal relation? Following Moore (but not Russell, who uses the expression "internal relation" in a quite different way), we may say that a relation is internal with respect to objects, *a*, *b*, *c* etc., just if, given *a*, *b*, *c* etc., the relation must hold between and of these objects.[20]

All the internal relations appealed to in Section 3 fall into three large groups, (A)–(C).

(A)   Internal relations between contents, propositional and non-propositional.

If no nominalist account of the terms of the different relations of justification can be given, then, to that extent, the analysis given here will no longer be nominalist.

(B)   Internal relations between things.

The two examples discussed above are numerical difference and identity and origin.

(C)   Internal relations between tropes or between tropes and things

Consider, first of all, comparatives. The truth-bearer

> Mary is happier than Erna,

is a contingent proposition. It is made true, the suggestion went, by the relation of greater than between the happiness of Mary and the happiness of Erna. This relation is an internal relation: those two happinesses necessitate

the obtaining of the greater than relation between them. Mary's happiness depends on Mary, but she is independent of it, and the same goes for Erna and her happiness. It is because Mary and Erna are independent of their happinesses that the proposition is contingent and the relation between Mary and Erna an external relation.

Resemblance, too, is an internal relation if it is a relation between tropes. If two things, *a* and *b*, resemble one another this is because there are tropes of the one which stand in an internal relation of similarity to tropes of the other. But perhaps this option is not always open. Perhaps there are relations of brute similarity. As Hume suggested, two simple objects would resemble each other but not in virtue of resemblance between two simplicities.

Causality, too, we have seen, may be considered as an internal relation between monadic tropes of things, between events. The relevant internal relation is provided by two different types of dependence. Similarly, perceptual intentionality – which I suggested was at the root of conceptual intentionality and so at the root of intentions and of social relations – involves internal relations of dependence between psychological tropes, mode and content, and things.

What is the relation between the different internal relations appealed to? Every internal relation involves dependence but dependence is itself an internal relation. Thus, a particular greater than relation, or a particular relation of numerical difference, if a trope, depends on its terms, just as they necessitate it.

Unfortunately, as we saw, the relational predicate "occupies" does not seem to have any internal relation as its semantic value. Occupation is an external relation through and through, the very model of an external relation, and mentioned so often by Russell for just that reason. So the thesis that all major types of thick, relational predicates have as their semantic values internal relations is false. It is true, at best, only for predicates other than those belonging to the "occupation" family. Russell wins.

However, there are two ways of dissolving the external relation of occupation. Occupation, it was said, is an external relation between a thing and a region, say a spatial region. The thing in question belongs to the ontological category of three-dimensional continuants. Such a thing has a beginning in time and an end in time, it is the subject of changes, it has a history made up of events and processes in which it is involved, which depend on it, but it has no temporal parts.

Suppose, now, that – like Lesniewski, Whitehead, Quine, Smart and Lewis – you decide that in fact the category just described, of things, is empty. Suppose you think that there are entities in time but they are all

of them episodes or states, that everything in time is a space-time worm. Then, of course, no thing stands in any occupation relation. What, then, makes true predications containing "occupies"? Friends of space-time worms are not in general friends of dependence. But if we help ourselves to dependence then we may say that predications employing "occupies" are made true by one-sided dependence relations between tropes, simple or complex, and regions, spatial and temporal. Movement, then, is no longer the successive occupation of places by things but genidentities of tropes each of which depends specifically and one sidedly on a place. These one-sided dependencies are not the only internal relations involved. There are also, in the case of movement, the internal distance relations between places.

A variant of this view allows for substances but denies that these endure, substances then are momentary and what we ordinarily call things are in fact *entia successiva*. Then to say of such a momentary substance that it occupies a region is to say that it depends one-sidedly on this region.[21] Each of these two ways of dissolving occupation involves rejecting what seems to be an assumption of naive physics, that there are enduring substances.

In order to sketch the claim that the truth-makers of all major types of relational predication are thin, internal relations I have had to assume a large number of more or less controversial positions. Some will find space-time worms hardest to swallow – indeed on the 4-dimensionalist view they cannot be swallowed and so it is not the case that they should be. Others will perhaps think that perception is, after all, a thick relational trope or universal. Others will doubt whether the relationality of propositional attitudes is in fact inherited from perception.[22] Others will be sceptical of the very idea of necessary existential dependence within a nominalistic framework.[23] And of course, there is the majority view that all talk of tropes and truth-makers is either incomprehensible or intolerable.

What light does the view outlined throw on the history of the the theory of relations? (1) As far as I can tell, the category of internal relations is not very clearly outlined before Locke and Hume. Nevertheless, the similarity between the accounts of comparatives summarised in Section 2 and the appeals to equality, inequality and greater than cited in Section 3 is quite striking. (2) On one point my project may have appeared to deviate considerably from the tradition, where acceptance of enduring substances is widespread. But very often, too, it has been held that the fundamental terms of relations are ideas. If that – disastrous – assumption is made, it becomes quite easy to analyse spatial and temporal location and occupation in terms

of a relation between qualities and ideas of places or times. And this is indeed a psychologistic analogue of the view I have sketched.

5. DOUBTS

5.1. *Two Russellian Doubts*

Given the rôle awarded to Russell in the foregoing it is only appropriate to consider two discussions where he objects to aspects of the philosophy of thin relations espoused here.

At PoM (§214) he considers a monadistic theory belonging to the class of theories that deny reality to relations:

The proposition "*A* is greater than *B*" is to be analysable into two propositions,one giving an adjective to *A*, the other giving one to *B*. The advocate of the position in question will probably hold that *A* and *B* are quantities not magnitudes, and will say that the adjectives required are the magnitudes of *A* and *B*.

On this view, relations are eliminable, the conjunction of two monadic propositions is supposed to provide an analysis of the relational analysandum. This is the sort of theory, then, that a friend of thin relations rejects. For him, as for Russell, relations are what they are and not another thing. (Notice, too, that in the account of comparatives in Section 2, A and B are things, their "adjectives" tropes or their quantities.) Russell continues, rightly,

But then he will have to admit a relation between the magnitudes, which will be as asymmetrical as as the relation which the magnitudes were to explain.

This is just the claim of those who espouse an analysis of comparatives like that in Section 2. But it is not the claim of monadistic theories. Against these, Russell objects:

Hence the magnitudes will need new adjectives, and so on *ad infinitum*; and the infinite process will have to be completed before any *meaning* can be assigned to our original proposition. This kind of infinite process is undoubtedly objectionable, since its sole object is to explain the meaning of a certain proposition, and yet none of its steps bring it any nearer to that meaning. (PoM, §214)[24]

Russell's objection is decisive. As he notes earlier in PoM, regresses are deadly at least in the context of analyses. But he never, I believe, considers the view alluded to in this passage, that comparatives dealing with *temporal* entities might be made true by thin asymmetrical relations connecting their features.

In this connexion, a point made by Katz (1995, 388–389) is of interest. Katz notes that Russell's famous account of the ambiguity of

I thought that your yacht was larger than it is

as meaning either

The size that I thought your yacht was is greater than the size your yacht is

or

I thought that the size of your yacht was greater than the size of your yacht

is incompatible with the view that "*a* is larger than *b*" is an unstructured predicate.

Russell touches at one point on the notion of existential dependence. In his enthusiastic review, 'Meinong's Theory of Complexes and Assumptions' (1904), he finds himself perplexed by the fact that the theory in terms of which Meinong presents a large number of acceptable and impressive results seems itself to be unacceptable. The theory in question is Meinong's theory of thin, ontological dependence or foundation relations. These connect lower-order and higher-order entities and may also be, for example, two-sided. Meinong's description of these, Russell says,

> is based on logical priority: the *inferiora* are in some way prior to their *superius*. Now logical priority is a very obscure notion; and so far as can be seen at present, it is one which a careful discussion tends to destroy. For it depends on the assumption that one true proposition may be implied by another true proposition, and not the other by the one; whereas, according to symbolic logic, there is a mutual implication of any two true propositions. The appearance of one-sided implication in such cases arises, it would seem, from an unconscious substitution of formal for material implication. Thus it would result that the subsistence or being of a whole cannot presuppose that of its parts in any sense in which that of the parts does not presuppose that of the whole. (Russell 1973, 25)

Now, Russell's assumption that Meinong's view turns on a claim about relations of implication between propositions corresponds only to some statements in Meinong. More often than not Meinong makes the point that foundation is a relation between objects; it is not a type of implication.[25] It is thus somewhat unfair to accuse Meinong of confusing two types of implication. More generally, Russell's objection is a good example of the error of running together logic and ontology, and so, for example, of running together the theory of truth-bearers and that of truth-makers.

Scrupulous Cambridge zoologist that he is, Russell then goes on to say, in a note, that

> it must be admitted, however, that one-sided inferences can practically be made in many cases, and that consequently *some relation or relations other than that considered by symbolic logic must be involved when we infer*. One such relation is that with which Meinong

is concerned, the relation of the simple to the complex .... (Russell 1973, 25; emphasis mine)

5.2. *Monadicity?*

The foregoing account of thin relations relies on the existence of monadic tropes. The objections to monadic *tropes* from Russell and Moore to Austin and beyond are well-known. Less well known, perhaps, are objections to the very idea that anything – properties or tropes - is monadic. Suppose Sam is sad. His sadness depends in some sense of that word on its cause, but also on a number of other things such as gravity. His sadness *on* Monday may give way to anxiety *on* Tuesday. For very many good reasons none of these considerations lead us to *say* that the concept of sadness or anxiety is really relational. But the ontologist interested in tropes, properties and relations, rather than the corresponding concepts, cannot rely (so easily) on our linguistic intuitions. *So understood*, the Bradleyan slogan "Everything depends on everything else" seems to me to present a real danger to views like those I have sketched here. (As does the view that relations have a variable adicity, and for related reasons). More generally, it is not clear when a trope which depends on a person and a trope, as in the example from visual perception above, where the mode of seeing depends on a subject and on a content, counts as a relational trope. Finally, if we give up substances then it is no longer clear what it means to say that a trope is monadic.

5.3. *Conceptualism Threatens*

There is an objection to the account proposed which is, I think, independent of all objections so far mentioned. In my initial publicity, I suggested that the project of doing without thick relations would leave intact the realism about relations of Scotus, Meinong and Russell, and, in particular, would not presuppose that relations, realistically understood, could be reduced to monadic facts (*this* is what Russell calls the doctrine of "internal relations"). But consider the truth-makers of some basic predications employing thin relational predicates:

What makes true

$$a = b?$$

Answer: a (or, b).

What is the truth-maker of

a depends on b?

Answer: *a*

> What is the truth-maker of
>
> Mary's sadness is greater than Erna's sadness?

Answer: Mary's sadness, Erna's sadness.

> What is the truth-maker of
>
> Defeasibly justifies (Sam's perception as of a dog, his assertion "That is a dog")?

Answer: Sam's perception, his assertion.

If this is right, then such predications need not be made true by any relations. This does not entail that there are no such relations. But, if we bear in mind the notorious difficulties involved in deciding whether such thin relations are tropes, universals or something else again, we may well find ourselves on the slippery slope towards either conceptualism or eliminativism about relations. A slippery slope which does not beckon the philosopher who believes in irreducibly thick relational tropes or universals.

ACKNOWLEDGEMENTS

NOTES

[1] On the notion of truth-making employed in what follows, cf. Mulligan et al., 1984.

[2] The related claim about both relations and our ideas of them was to be defended much later by the Gestalt psychologists and Scheler.

[3] This is because Frege's use of the (Bolzanian sounding) distinction between "a part that appears to be invariant" and a "replaceable part" is connected with his very radical view about the relation between logical and "ontological" form and his claims, in §9, that a function is both a linguistic entity and something such that "there are various ways in which the same conceptual content can be regarded as a function of . . . ".

[4] In the last sentence, Frege's formulation is compatible with that attributed by Russell to monism, a view Russell rejects.

[5] One way of bringing into focus the relation between semantics and ontology in Frege is to consider a puzzle about his view of the ontology of psychological relations. Graspings and judgings are psychological particulars belonging to the second world. But the semantic values of the senses of "judges" and "grasps" in sentences are concepts. There are many ways of reconciling these two claims, but it is not clear which of these Frege took to be compatible with his system.

[6] But cf. Evans (1985, p. 56f.).

[7] Cf. Mulligan et al. (1984); Mulligan (1998).

[8] Cf. Simons (1998), Mulligan (1998); Smith (1997).

[9] On the Scottish defence of such real relations and the English denial, cf. Henninger (1989, Chaps 5, 7).

[10] Cf. Küng (1967); two remarkable recent accounts of tropes are Bacon (1995); Denkel (1996).

[11] Cf. Henninger (1989, 5).

[12] Cf. Simons (1987).

[13] Cf. Johansson (1989); Campbell (1990); Mulligan (1993); and on comparatives, cf. Tegtmeier (1992); Katz (1995).

[14] The points made here about social properties hold also for value properties. What is true of values is often true of colours. But in fact many philosophers *have* endorsed monadic, mind-independent colour tropes. For some interesting arguments in favour of the view that if colours are mind-independent and are not identical with reflectance properties then they must be universals, see Maund (1995).

[15] Cf. Mulligan (1998).

[16] This account works well enough for "primary" epistemic seeing. But in "secondary epistemic seeing, as when Sam sees that the tank is full by looking at the dashboard the simple seeing on which the epistemic seeing is based is of particulars which are closely related to the truth-makers of the belief.

[17] Cf. Mulligan (1998a). For the related view that singular reference inherits its relational character from perception, cf. Mulligan (1997, 1997a).

[18] Cf. Mulligan (1993).

[19] Cf. Mulligan (1993a), Smith (1997).

[20] Cf. Mulligan (1991, 1993).

[21] This view is that of Brentano and Chisholm (1976, Chap. III), cf. also Tegtmeier (1992, 69–76).

[22] Were it the case that perceptual and other intentional relations furnish the only genuine cases of thick relations, then the way would be open for a new version of Brentano's argument from the unique exemplification of an ontological category to the truth of dualism.

[23] If Kit Fine (1995) is right, dependence presupposes essences, understood as universals.

[24] Cf. IMP, 42f.; MPD, 54f.; MTT, 144.

[25] Husserl, in his account of dependence in the third of his *Logical Investigations*, is much clearer about this point than Meinong. It is, however, true that the main anticipation of their theory, Bolzano's theory of foundation (*Abfolge*), is a theory of a relation between truths.

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