Toulmin's Logical Types

Abstract: In "The Uses of Argument" Toulmin introduces a number of concepts that have becomepopular in argumentation theory, such as data, claim, warrant, backing, force, field, and, most fundamentally, the concept of a "logical type". Toulmin never defines the concept of a logical type or a field very clearly, and different interpretations can be found in the literature, either reconstructing what Toulmin has in mind, or revising his concepts to suit other concerns.

A natural history of these concepts is not my concern.I will analyse logical types according towhat Toulmin uses this concept for, namely to raise a problem with deductive logic and motivate its replacement with the Toulmin model.

I will argue that a logical type and the distinction he draws between different logical types resembles distinctions made in logical positivism between the directly and the indirectly verifiable, and the problem raised is, in essence, the positivist's problem of how indirect propositions can be justified on the basis of direct propositions.

I will show that Toulmin makes a straw man of the positivists' own solution to the problem and hence does not prove there to be an adequate motivation for replacing deductive logic with the Toulmin model. I will also show that Toulmin does not really propose a solution to this problem at all.

Keywords: Stephen Toulmin, logical types, fields, phenomenalism, positivism

1. What is a logical type?

Toulmin never defines his concept of a logical type. Instead, he indicates what he means through the use of examples.

In *The Uses of Argument* (1958)the term first occurs at pp.12-13:

> The conclusions we come to, the assertions we put forward, will be of very different kinds, according to the nature of the problem we are pronouncing judgment about: the question may be, who will be selected in the Davis Cup Team to play against Australia, whether Crippen was justly found guilty of the murder of his wife, whether the painter Piero della Francesca fully deserves the praise which Sir Kenneth Clark bestows upon him, whether Professor Fröhlich's theory of super-conductivity is really satisfactory, when the next eclipse of the moon will take place, or the exact nature of the relation between the squares on the different sides of a right-angled triangle. . . . [I]f challenged it is up to us to produce whatever data, facts, or other backing we consider to be relevant and sufficient to make good the initial claim.

Toulmin refers to "kinds" rather than "types" here. The idea seems to be that a conclusion about selection for the Davis Cup Team resolves a problem about tennis, a conclusion about Crippen's guilt resolves a problem about jurisprudence, etc. Tennis, jurisprudence, aesthetics, theory acceptance, prediction, and mathematics all have a certain domain of problems.

Toulmin immediately continues on p.13:

> Just what sort of facts we point to, and what sort of argument we produce, will again depend on the nature of the case: the recent form of the leading American tennis players, the evidence produced in the Crippen trial and the conduct of the proceedings . . . The statements of our assertions, and the statements of the facts adduced in their support, are, as philosophers would say, of many different 'logical types' — reports of past and present events, predictions about the future, verdicts of criminal guilt, aesthetic commendations, geometrical axioms and so on.

Here we find the first occurrence of the phrase "logical type." It seems to be the same as what he called a "kind" in the previous paragraph, only here extended to cover not only conclusions but the "data, facts, or other backing" that we adduce in justification of that

conclusion. It is propositions that have a logical type.

Picking up the same passage slightly later at pp.13-14, Toulmin says:

> [D]epending on the logical types of the facts adduced and of the conclusions drawn from them, the steps we take – the transition of logical type – will be different. The step from reports of recent tennis-playing form to a predicted selection (or to the statement that a particular player deserves to be selected) is one thing, the step from evidence about clues in a murder case to the guilt of the accused party is another, that from the technical features of pictures painted by an artist to the merits we accord him is a third, that from laboratory records and armchair calculations to the adequacy of a scientific theory yet another, and so one might go on. The justificatory arguments we produce may be of many different kinds . . .

Since getting from "the facts adduced" to "the conclusions drawn from them" is said to involve a transition of logical type, it follows that Toulmin takes these adduced facts to be of a different logical type to the conclusion. But if logical type were determined by the kind of problem as I just suggested, this would be impossible.[1] It is the transitions between types that

[1] Is the selection of a player for the Davis Cup of the same logical type as a prediction that a particular player will be selected, and as the normative judgment that a particular player deserves to be selected? It is not clear. Our prediction of a selection may turn out to be false without it being any less true that the player deserved to be selected. There may be a confusion here about a prediction being true (fulfilled) and it being the right prediction to make. The facts adduced are equally adequate to its being the right prediction to make and the player deserving selection (except that for the prediction we must assume additionally that the selector is aiming at selecting the most deserving player, and has access to the same information we do). In this sense of being the correct prediction, then, there does not seem to

are prior and determined directly by the problem domain, and the logical types of the elements in the argument are parasitic on the kind of transition.

In Toulmin's view, the presence of a type-jump in an argument creates a problem for the deductivist view that in all good arguments the conclusion is entailed by the premises. A proposition of one type cannot be entailed by propositions of another type; it cannot possibly be repeating information that is already there, that is to say, the conclusion cannot be contained in the premises. Such an argument must instead be 'substantial' as opposed to 'analytic.' According to Toulmin (1958, pp.114-17), an argument is 'analytic' when checking the premises (or, more specifically, the 'backing') involves checking the conclusion; *a fortiori*, a deductively valid argument, by virtue of the conclusion being contained in the premises, is 'analytic.'[2]True, we can put the argument into a form which is formally valid by adding a warrant that explicitly licenses the type-jump.

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be a difference in logical type between this and the normative judgment. Also, whether this is the correct prediction is a fact about the prediction and is true or false when the prediction is made and depends on the evidence available when the prediction is made, and only indirectly about the event predicted, which may in fact never come about.

[2] Thus, "deductively valid" is not another way of saying"analytic" or vice versa, and some arguments that are not deductively valid are nonetheless analytic, on this meaning of 'analytic.' This distinction is itself fraught with problems that I do not intend to discuss here. For a discussion see Hamby (2012). There is one comment that I would like to make though: I think that we are supposed to read the procedure of checking *subjunctively*, that is to say, an argument is analytic if, *were* you to check the backing, you *would* ipso facto check the conclusion. It does not, then, cease to be analytic because you may have already checked the backing [as Hamby (2012) seems to suggest], for it is still the case that checking the backing

Referring to the type-jump as a "logical gulf" Toulmin writes (1958, 9):

> [W]henever claims to knowledge have been seen to be based on evidence not entailing analytically the correctness of the claim, a 'logical gulf' has been felt to exist which the philosopher must find some way of bridging or of conjuring away, and as a result a whole array of epistemological problems have grown up around scientific, ethical, aesthetic and theological claims alike.

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would involve checking the conclusion. When Toulmin (1958, 117) says that even such an argument "may slip . . . into the substantial class" he is not saying that, because checking the backing may be in the past, what he has just given as an analytic argument is not really analytic at all; rather, he is saying that when backing involves facts about the past, the conclusion must also be about the past if the argument is to be analytic, and if it is about the present it is substantial. Toulmin does not say that it is a problem that the *checking* is in the past, but that the facts *checked* are in the past. Just as we can check what is true now (e.g., by looking) we can check what was true in the past (e.g., by consulting written records). The checking itself is always subjunctively construed.

So, an argument whose backing involves facts about the past is still analytic if the conclusion is about the past, but is not when the conclusion is about the present, because what we have been (or would be) checking is a fact about the past and not the present. Since facts about the past and facts about the present are of different logical types such an argument must be substantial for Toulmin. Toulmin (1958, 117) says that the conclusion of this substantial argument is a *presumption* that something is true now. The time at which the checking is carried out is irrelevant, and, in fact, it need not actually be carried out — we can tell that an argument is analytic without actually checking the backing but by seeing that checking the backing involves checking the conclusion on the basis of their semantic content.

At pp.115-16 he writes:

> We make claims about the future, and back them by reference to our experience of how things have gone in the past. We make assertions about a man's feelings, or about his legal status, and back them by references to his utterances and gestures, or to his place of birth and to the statutes about nationality; we adopt moral positions, and pass aesthetic judgments, and declare support for scientific theories and political causes, in each case producing as grounds for our conclusion statements of quite other logical types that the conclusion itself.

This is repeated with variations on pp.202-203:

> We make assertions about the future, and back them by reference to data about the present and the past; we make assertions about the remote past, and back them by data about the present and recent past; we make general assertions about nature, and back them by the results of particular observations and experiments; we claim to know what other people are feeling, and justify these claims by citing things they have written, said and done; and we put forward confident ethical claims, and back them by statements about our situation, about foreseeable consequences, and about the feelings and scruples of other people concerned.

At p.162 statements about causation, other minds, material objects, and memories are added.

Here is a list of examples:

i) Prediction (p.13 & p.60 & p.93 & p.112 & pp.124-25 & p.154 & p.156 & p.169 & pp.203-204 & pp.211-214 & p.219 && pp.212-214 & p.232)

ii) Theory acceptance (p.9 & pp.12-14 & p.19 & p.60 & p.70 & pp.115-16 & p.120 & p.203)

iii) Moral/ethical judgment (p.9 & pp.12-13 & pp.115-16 & p.125 & p.149 & p.161 & p.162 & p.203 & p.205 & pp.212-215)

iv) Aesthetic judgment (p.9 & pp.12-13 & p.34 & pp.115-16 & p.125 & p.162 & p.205)

v) Theological claims (p.9 & p.125 & p.205)

vi) Psychological claims (pp.115-16 & p.203 & pp.212-214)

vii) Legal claims (pp.115-16 & p.120)

viii) Causal claims (p.162)

ix) Claims about the remote past (pp.202-203 & p.214)

x) Other minds (p.162 & p.208 & p.214)

xi) Material objects/the external world (p.162 & pp.212 & p.214)

xii) Memories (p.162)

xiii) General claims (p.215)

Some of these [especially (ii) to (vii)] seem to correspond to a fairly specific subject matter, while others seem more general. Predictions, for example, can be made about just about any subject, yet I do not think Toulmin would count all predictions as being of the same logical type; a prediction about who is going to win a tennis match is not to be judged by the same standards as a prediction about what will happen if an aircraft engine loses power — these are not of the same logical type. However, the fundamental problem in prediction is the same in any subject: getting from statements about the past to statements about the future, or to put it slightly different, explaining how statements about the future can be justified by statements about the past. How is this even possible when they are of different logical types?

With the possible exception of (vii) legal claims, all of these examples correspond to problems raised by the logical positivists, and we will see in section 4 Toulmin arguing directly with the logical positivists over these questions, focussing primarily on the problem of prediction. This suggests that the different logical types can be made to correspond roughly with distinctions made by the positivists. What we see are the same problems

expressed in different terms, as Toulmin is well aware. Where Toulmin sees a difference in logical type, a positivist will see in these examples a difference between premises that state directly verifiable facts and indirectly verifiable facts. What it turns out they mainly disagree on is what the proper relation is between these two types of proposition. As I see it, Toulmin's use of a warrant is less an answer to this question than a way of pretending there is no real problem at all.

But first I want to look at fields as they occur in *The Uses of Argument*. Since its publication, various authors have discussed this issue widely, but that discussion is immaterial to my purposes. My aim is to give Toulmin's notion of a field as it occurs here, how it relates to his notion of a logical type, and how these fit together in his attack on deductivism and replacement of it with the Toulmin model.

2. What is a field?

Where the logical type is something that belongs to propositions, a field is something that belongs to the argument. Just as he never really defines the concept of a logical type, he never really defines the concept of a field. As before, he gives examples, and this time also an identity condition.

As examples, he says that the proofs of Euclid's Elements belong to one field, the argument "Petersen is a Swede, so he is presumably not a Roman Catholic" belong to another, "Defendant was driving at 45 m.p.h., so he is committing an offence against the Road Traffic Act" to yet another. There seems to be an indefinite number of fields for Toulmin.

The identity condition states: "Two arguments will be said to belong to the same field when the data and conclusions of each of the two arguments are, respectively, of the same logical type" (Toulmin 1958, 14). In other words, the data of the first argument must be of

the same logical type as the data of the second argument, and the conclusion of the first argument must be of the same logical type as the conclusion of the second argument. This must mean that each field has a unique type-transition that is characteristic of that field. A field, then, is something very like what I referred to above as the problem domain (Toulmin 1958, 154):

> If fields of argument are different, that is because they are addressed to different sorts of problems. A geometrical argument serves us when the problem facing us is geometrical; a moral argument when the problem is moral; an argument with a predictive conclusion when a prediction is what we need to produce.

3. Criticisms

Fields and logical types are both important concepts for Toulmin, yet he does not define either of them. He is criticized for this in van Eemeren, Grootendorst, and Henkemans (2009, 136), who offer (very tentatively) as a possibility that Toulmin may have been using Ryle's concept of a logical type, and so did not define it because imagining it to be well-understood by his readers. Indeed, in one of the excerpts above he has said "as philosophers would say, of different logical types," and one can only wish that he had been more forthcoming about which philosophers he was referring to; I suspect it was the Vienna Circle rather than Ryle.

Toulmin's logical types are not the same as Ryle's logical types for one very simple reason: in Toulmin, it is propositions or assertions that have a logical type, whereas in Ryle it is terms or concepts that have a logical type. Ryle's logical types are essentially the same as categories and are meant to capture the idea that some kinds of predicates can be significantly predicated of only certain kinds of subjects. Take the predicate "is in bed." Think of the predicate as a function, firstly as the sentential function "____ is in bed" and secondly as the propositional function IsInBed(x). Filling in this sentential function with any noun phrase

will give a subject-predicate sentence, and this sentence will be grammatically correct. One might be tempted into thinking that now this sentence expresses the proposition that results from substituting for x in the propositional function whatever the noun phrase refers to. For example, "Garfield is in bed" expresses the proposition IsInBed(Garfield), and this proposition is either true or false. However, now consider the sentence "Saturday is in bed." As before, this sentence is in a perfectly grammatical subject-predicate form, yet it is nonsensical; it does not express a proposition, and hence not the kind of thing that can be true or false. Only a certain range of values can substitute for x in the propositional function, and when something outside that range is substituted, the result is a category-mistake or type-mismatch (Ryle 1938).

There does seem to be some influence on Toulmin from Ryle, though. Just as there is an indefinite number of fields in Toulmin, there is an indefinite number of logical types in Ryle. Furthermore, just like Toulmin, Ryle never actually defines his concept of a logical type, but gives only criteria of identity and individuation: two terms are of different logical-types if there is some sentential function that is meaningful when filled with one term but absurd in the other. Thus, Saturday and Garfield are of different logical-types because "Garfield is in bed" makes sense and "Saturday is in bed" does not. This does not prevent the meaningfulness from depending on having terms of the right logical type, however; it is a difference in the order of knowledge only and does not invalidate the criterion.[3] It does, however, make it dubious how useful in practice such a condition is. Ryle's is a very holistic theory of types, not dissimilar in many ways to inferentialist accounts of meaning. Thus,

[3] It is true, though, that there is no formal test for absurdity. It is presumed that this is something we can just "see," or can be made to see once analysis has unmasked "disguised nonsense," to use Wittgenstein's phrase.

perhaps this style of definition is forced on Ryle, and perhaps on Toulmin. It is also worth noting that Ryle was criticized for failing to provide a definition of logical types (Holth 2001, 206) in much the same way as Toulmin has been. Toulmin seems to have taken his style of providing definition from Ryle, even though their concepts of logical types are different. (Of course, it is still true to say that only meaningful propositions can be adduced as reasons.)

The practical uselessness of Ryle's criterion is inherited by Toulmin. Just as Ryle has us consider the meaningfulness of sentences in order to determine the logical types of the terms used in the sentence, it seems we must consider the field of the argument in order to determine the logical types of the assertions. Furthermore, just like Ryle's, Toulmin's criterion of individuation of fields seems next to useless in practice: firstly, it depends on the undefined concept of a logical type; secondly, if we follow the recommendation above that the logical types can be determined from the type-transition, then, if the type-transition depends on the field, we can only determine the logical types after we know what the field is, and so cannot, in practice, use the logical types to distinguish between fields.

4. Logical types and logical positivists

Whether Toulmin is conscious of this or not, from the examples it appears that logical types have something to do with the threefold distinction made by the positivists between the verifiable, the a priori, and the meaningless. The class of the verifiable sub-divides into two sub-classes: the directly verifiable observation-statements sometimes called *direct propositions*, and the indirectly verifiable claims that can be related in some way to the direct propositions and are sometimes called *indirect propositions*. The type-jump that seems to be involved in most of these examples (legal claims being the noticeable exception) is from the directly verifiable to the indirectly verifiable. Cases where the conclusion does not seem related in any way to the directly verifiable, as they would say is true with regards to ethical,

aesthetic, and theological claims, [(iii), (iv) and (v) above] cannot be verified and so are meaningless. We simply cannot get to a moral claim from sense-data — it is a logical gulf that cannot be crossed. This is something that we know from Hume who made a radical separation between facts and values, and also from G.E. Moore who pointed out that no set of natural facts would ever close the question "Is this good?" You cannot get an 'ought' from an 'is', or, what is the same thing, an argument with a normative conclusion cannot be valid unless it contains a normative premise.

Not all arguments contain type-jumps, and where the conclusion is of the same type as the premises and the argument is valid, the conclusion will be contained in the premises. For instance, when the premises and conclusion report directly verifiable facts about the present, the argument (if valid) will be analytic. Additionally, we will get analytic arguments when the premises and conclusions are basically consequences of how we have chosen to use our terms; the conclusion "2+2=4" does not express a fact, according to the positivists, but reflects our decision to use the symbols "2," "+", "4", and "=" in a certain way. We could have chosen to use those symbols in a different way, and so the necessity of "2+2=4" is only relative to such a decision. These are true in virtue of meaning.

So, a first pass on answering the question "What is a logical type?" or "What are the different logical types?" seems to be "directly verifiable propositions, indirectly verifiable propositions, unverifiable propositions (the meaningless), and linguistic conventions (the a priori)" Toulmin further divides the direct and indirect propositions by field. Here he seems to be talking about the use of an argument. The direct propositions appealed to as the data in an argument that is used to make a judgment about tennis must themselves be in some sense about tennis, although "tennis" will not of course be part of the observational vocabulary.

Thus, we see many of the questions Toulmin asked addressed in logical positivism. Carnap's *Der Logische Aufbau der Welt* (*1928*) attempted to reduce material objects and the

external world [(xi) above] to logical constructions of our sense-data. Logical behaviourism attempted to reduce talk about psychological states to talk about observable behaviour [(xi) above]. Hume attempted (at least, this is how he was understood by the positivists) to show that our talk about causation could be reduced to talk about regularities [(viii) above].

It is worth noting – lest the positivists be made into straw men – that in many cases there was not held to be an equivalence between the indirect propositions and the set of direct propositions. The requirement of equivalence is a consequence of an extremely strong reading of the verification principle that requires absolute verification. Some early positivists certainly held this, and consequently found themselves committed like Mach to denying the existence of atoms. Likewise, the "formal" and "material" modes by which Carnap tried to show the reducibility of statements about external objects to statements about sense-data are seemingly supposed to be equivalent.

Absolute verification became less popular as time went on, however. In *Language, Truth and Logic* (1936) Ayer argues for a much weaker form of verification, in *Experience and Prediction* (1938) Reichenbach argues that the relation between direct and indirect propositions is a probability relation (and, in the end, there are no direct propositions), and in *Positivism* (1956) Richard von Mises presented a version where even metaphysical and theological claims were not denied meaning, more or less replacing verifiability with a gradualist notion he called connectibility, where some kinds of propositions are closer to propositions in observational language than others but none are cut off absolutely.

In Toulmin's view, this is all a mistaken attempt to analyze away the type-jump when in fact it is a fundamental feature of the argument and the problem to which the argument is advanced as a solution. This attempt is motivated by an equally mistaken desire to put all arguments into a form where the premises entail the conclusion. The kind of argument that he uses most to illustrate this contention is prediction, so we should look at this in more detail.

5. Prediction and Phenomenalism

Toulmin discusses phenomenalism on pp.211-214. It takes a "professional paradoxologist," he says, to suppose that statements seemingly about the future, and expressed in the future tense, are really disguised restatements about the present and past, or that statements seemingly about the past, and expressed in the past tense, are really disguised restatements about what present and future observations we might take to verify them. If we are asked to predict the future, only a statement about the future will answer it; reducing such a statement so that no reference to the future is made is to change the subject and not to make a prediction at all. Also, when the issue is propositions about the remote past, or about material objects or objects existing unobserved, appeal is made to future observations, yet when the issue concerns the future, we appeal to past observations. Toulmin seems to imply that reductionism is thereby guilty of being inconsistent.

Toulmin here makes a straw man of phenomenalism, selecting for his target only that extreme form which holds to an equivalence between propositions about the past and those about the future. Instead of using Mach, Schlick and Carnap as the basis of his comparison, he should consider rather Ayer, Reichenbach and von Mises. It is the view of positivism that Toulmin criticizes that is also being criticized when Reichenbach (1938, 74) notes that an insistence that every proposition must be absolutely verifiable (be given a definite truth-value) in order to be meaningful, led to a counter-intuitive view of science that repudiated any predictive role for science as the cost of maintaining that statements about the future were meaningful after all. His solution is to reject absolute verification and replace the concept of truth with the concept of *weight*: we may not be able to give statements about the future a truth-value, but induction on the basis of statements about the present and past do allow them to be appraised with a certain weight.

Here, some kind of inductive generalization does the job of Toulmin's warrant. In its way, it contains the type-jump that Toulmin's warrant does. True, since propositions about the future can be as much in an observational language as those about the present or the past it would not represent this difference as being one of logical type. Yet it is because the semantics of the inductive generalization includes reference to the future that predictions can be made.

We can see this if we compare it with something like Popper's falsificationism. Popper insisted that the fact that a hypothesis has passed critical tests is only a record of its past performance and not a guide to its future performance. Salmon (1981) objected that this made practical predictions impossible; a statement about the future can only be entailed from another statement about the future, and a universal generalization is a statement about the future in that it makes no distinction as to time. Incidentally, this means there is no particular problem or inconsistency in using statements about the future as part of the meaning of statements about the past that are not directly verifiable; the inductive argument itself is indifferent, except for the obvious fact that the inductive generalization cannot be established except by propositions for which weights could be given. If weights can be given (e.g., as a result of a different induction) then there is no reason in principle why these could not be part of the inductive basis of a retrodiction about the past. In fact, Reichenbach comes to the conclusion that even observation-statements about a current experience can be given a weight only.

The moral here is quite general. This is Reichenbach on material objects (1938, 85-86):

> A statement concerning a physical fact . . . never refers to a single fact alone but always contains some predictions. . . . It is because such predictions are included in the statement that it is not absolutely true, for an absolute reliability of the predictions

cannot be warranted.

> It might be proposed that we can separate these predictions from the statement, and reduce it to a bare factual statement; that is, that we exclude consequences concerning the table after five minutes, or concerning books placed on the table, and restrict the statement to the table just as it is seen. Such a reduction is possible; if we perform it, however, the statement loses its definite character. Saying, "There is a table," normally means that I maintain that what is referred to is a material thing capable of resisting the pressure of other physical things; this is what is expressed in the implication concerning the book. If I renounce implications of such a kind, the object I saw might be a picture furnished by a concave mirror . . . . The difference between the material object and the illusion cannot be otherwise formulated; it is only the consequences -- i.e., future observations -- which distinguish these two categories. This is the essential point. It might be objected that the future observations could be replaced by past observations -- that I might have put the book on the table a moment before, or touched the table with my hand a moment before. But if I infer from this that the table as I see it now, without a book on it and without my touching it, is a material table and not the image produced by a mirror, then I perform an induction running, "If I were to touch it now, I would feel the resistance," or "If I were to put the book on the table now, it would not fall" -- sentences which concern future observations and not past ones. It is true that past observations of the kind mentioned may suffice to substantiate my statement, but only because I base inductions on them; the statement concerning the table as a material object cannot be separated from predictions without losing its definite character; i.e., it would no longer indicate a definite physical object.

Far from analyzing away the type-jump, Reichenbach agrees that removing the predictive

content of a statement or set of statements is to remove its definitive character, in this case its character as describing a physical object.

It is not my purpose here to argue the case for phenomenalism: my point is only that Toulmin does not engage it properly. He confines his discussion to a form of phenomenalism and absolute verification that, although held by some, was certainly not held by all, and one cannot plausibly suggest that he was unaware of this. Instead of simply rejecting absolute verification he chooses the extreme course of rejecting formal logic altogether. Also, unless there is some problem that I cannot see in using an inductive generalization, then I see no problem in saying that the conclusion is entailed by the premises, even if there is a type-jump; the difference in logical type is not in this case a syntactic difference. In fact, the generalization seems to perform the role of Toulmin's warrant, but in other words.

Toulmin (1958, 210-11) does discuss adding an inductive generalization. As an example he gives the astronomical prediction of the position of Jupiter tomorrow, adding as a general premise "The theories of planetary dynamics that have proved reliable in the past *will continue* to prove reliable in this case." He comments that this does not really help: "This general principle is something of whose truth we could have positive assurance only when the occasion for making our current prediction was past" (Toulmin 1958, 210).

Certainly, we may agree that it is only when the event has occurred (or not) that a determinate truth-value can be given to a proposition expressing its occurrence. Reichenbach says as much. Equally, since this event and any future event must be subsumed in some way in the general rule, the rule is only assured up to the given moment when it is used. But this seems to assume firstly that general claims can only be made when we are absolutely certain of them, and secondly that when we make a prediction we are assigning a truth-value to a proposition. The first seems a very odd position for Toulmin to hold, for one of the points Toulmin makes repeatedly is that we can to all intents and purposes be certain of something

even though it is logically possible for the premises to be true and the conclusion false: this is just the nature of substantial arguments. The second ignores the fact that although we cannot be certain of the proposition's truth-value, we can, according to Reichenbach, give it a weight. Such a proposition is what he calls an *appraised posit*. Reichenbach argues that the *practical limit* – the frequency ratio in the series up to now – can be given as the weight, because this is the best wager, and the best we can do if we need to make a prediction.

Certainly one may argue with Reichenbach about this. The point is that Toulmin does not. Instead he says (1958, 211) that the "crucial difference" is

> that in the first case the premises were uttered before the event, and in the second case after it: so that the second argument is considered, not as a repetition as the first, but as a post mortem upon it. Our epistemological quandary springs directly from the fact that, on the first occasion of utterance, the argument is a predictive one, and it remains untouched: no additional premise which can be established only by waiting until the argument is no longer predictive can help us to escape from the consequences of that fact.

We see again a parallel between this argument and the one Salmon makes against Popper. Toulmin assumes that because it is only past performance that can be established for certain, the general claim should only be considered as a compact restatement of that past performance. By doing this Toulmin puts Salmon's inductive generalization in the same boat as Popper's corroboration. But the difference between them is not epistemological but semantic — inductive generalizations are ampliative and do allow predictions to be made of future events. We can argue about how justified we are in using an inductive generalization, but this is just as true of Toulmin's warrants, and whatever justifies the use of one can equally be said to justify the use of the other.

Also, it is quite true that if we uttered the premises once the event has occurred it is

no longer a prediction, but this is the kind of pragmatic difference that Hempel, for example, is quite happy to concede between predictions and explanations (Hempel and Oppenheim 1948, 138). There can be pragmatic differences in how arguments are used, and these uses can have different names, but these pragmatic differences do not affect the quality of the argument.[4] If we utter the premises after the event has occurred we have made a mistake in calling it a "prediction," that is all; our argument has undergone a Cambridge-change. There is no "epistemological quandary" here, nor is this difference especially "crucial."

6.Conclusion

In this paper it was proposed that Toulmin's logical types differentiated between different types of statement in a way very similar to the logical positivists. The simple fact is, he seems to say, that we do jump from one kind of statement to the other: from statements about the present and past to statements about the future, from statements about the present and future to statements about the past, from statements about behaviour to statements about psychological states, from statements about foreseeable consequences etc. to statements about what is morally good. Arguments where these type-transitions are made cannot be analytic, that is to say, a statement belonging to one logical type cannot be some kind of restatement of something belonging to a different logical type, although arguments can be made formally valid by adding a warrant that explicitly includes the type-jump. The logical positivists, because of their attachment to the analytic ideal, try to analyze away the type-jump: statements about the future are simply restatements of the evidence we have, statements about the past are simply restatements about the evidence that we may have (the observations we

[4] See Botting (2014) for further discussion of how this issue has generally been mangled in argumentation theory.

may make in certain circumstances), statements about material objects are just statements about what sense-data we may experience, and statements about what is morally good are meaningless.

In saying this, I am not saying that Toulmin is specifically targeting the logical positivist. He means to criticize the analytic ideal on several fronts, and I am not saying that he does not provide other arguments against the analytic ideal. My main aim, as stated at the start, is to show that his main example (viz., prediction) does not prove there to be an inadequacy in the analytic ideal, whatever his other arguments may or may not show, or whatever other examples that he might have chosen would or would not show. Toulmin clearly seems to think that his example of the prediction illustrates something pretty cataclysmic about the limitations of deductive logic. Perhaps Toulmin is unwise to focus on the type-jump from statements about the present and past to those about the future to make the point he wants to make, because there is no syntactic difference between the statements here — all of them are presumably observation statements of some kind, whether in terms of sense-data or material objects, and whether such a statement is a direct or indirect proposition depends only on the time it was made, true statements about the future eventually becoming true statements about the present. He repeats Hume's point that no set of statements about the past can entail a statement about the future but that nevertheless we are often as certain of our predictions as we are of anything else, despite the logical possibility of the conclusion being false while the premises are true. It would not be to the point to object to someone's prediction: "Well, what you predicted *logically* might not occur," for this was just the nature of the problem in the first place. If the premises did entail the conclusion so that it was not logically possible that what was predicted did not occur, then it would no longer be a prediction. Is this the problem for the analytic ideal that Toulmin thinks it is?

When you look at this part of Toulmin's attack on the analytic ideal in more detail, in

particular at how Toulmin characterizes the 'logical gulf' and the possible responses to it (Toulmin 1958, 206-216),[5] it turns out that what he actually attacks is less the analytic ideal than logical positivism (especially in the form of phenomenalism), and moreover he makes a poor fist of attacking *that*.

First of all, he considers only an extreme view of logical positivism. If the analytic ideal required, as some positivists require, *equivalence* between the two types of statements then Toulmin might have a point, but Toulmin is extremely selective in the kind of phenomenalism he criticizes, for many do not require equivalence or, what amounts to the same thing, absolute verification of a statement for it to be meaningful.

But even if Toulmin's attack on the positivists were more successful than it is, I still fail to see how this proves anything at all about the analytic ideal, which is agnostic on what is to count as evidence and does not in itself distinguish between direct and indirect propositions. Anyway, whatever we eventually decide to count as evidence can be combined with the Toulmin model or deductive logic indiscriminately. In fact, the addition of a warrant is one way (among others) in which we can make the argument formally valid. The backing does not belong to the argument itself; it is what entitles us to use the argument. Nor is the fact that the backing can vary across fields any problem for the deductive logician. On this Castañeda (1960, 284) writes:

> It is hard to see how customary logic has failed to perceive the difference in backings that Toulmin has in mind. No logician has ever denied that we have to support the major premises, independently of the syllogism in question. No logician has ever even hinted that different major premises cannot have different supports or backings.

[5] Phenomenalism is not the only possible response: the others are transcendentalism and scepticism.

Surely, every logician will readily out-Toulmin all of us by agreeing that the backings are *statement*-dependent (or warrant-dependent, if you wish), not just field-dependent! Neither the analytic ideal nor deductivism as such has anything at all to say about what backs our premises.

Second of all, it is difficult to see that Toulmin actually engages any of the problems that the positivists were trying to solve (however much or little success they had in doing so); instead of trying to explain how facts about the past could justify statements about the future, he simply observes that we do make predictions about the future from facts about the past and introduces a new semantic device to represent this fact, namely the warrant. This is hardly adequate as a response to an appeal for justification. To the question "How do you get from statements of one logical type to another?" his answer seems to be the inferential *fait accompli* "You just do," then introducing the warrant as a statement that you do which, by explicitly including the type-jump, makes the problem of the argument's goodness seem to disappear. This is not normative philosophy but sociology.

Also, as already said, anything that could count as evidence backing the warrant can equally be seen as backing the use of, e.g., a universal quantifier or linguistic convention. If the backing is sufficient to support the warrant, then why not say that it is sufficient to support the inductive generalization? Both the warrant and the generalization contain as part of their semantics claims about the future, albeit in slightly different ways. We will not be certain that the inductive generalization is true, but this is no more a requirement for its use than it was for the use of the warrant. It is a semantic, not an epistemological, fact about universal quantification over events that it includes future events, and the fact that truth-values cannot currently be established with certainty with respect to the occurrence of those

events is immaterial.[6] Indeed, I see no fundamental difference between the warrant and the inductive generalization, logically speaking; we may like to say that we construe them in different ways (e.g., as a premise or as a rule), but nothing much follows from that.

Maybe a friend of Toulmin could recycle Toulmin's argument with an example other than prediction. Two possibilities suggest themselves, for different reasons. One is (vii) legal claims. Such an example would be Harry's being a British subject because he was born in Bermuda and the legal statutes state that someone born in British colonies of British parents (and Bermuda is a British colony, and Harry is born of British parents) is entitled to British nationality. Out of the list this is an anomaly, for here the type-jump does not seem to be from direct propositions to indirect propositions. But it is not obvious to me that the inference involved here is non-deductive: Harry must be a British subject in these circumstances, or if we want to leave room for exceptions we can say that a presumption that Harry is a British subject follows, but the conclusion follows just as necessarily either way — there does not seem to be any substitution-instance of {Born in Bermuda(x); BornOfBritishParents(x);

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[6] On Ayer's account, our justification for using it, or for using a principle of induction at all, is that it has worked in the past (Ayer 1946, 18), while Reichenbach (1938) sets out to prove the conditional that induction will lead to the truth if anything will. Toulmin's own comments on the justification of induction at pp.217-221 are rather puzzling. I suspect that he makes the equivocation mentioned in footnote 1 between making a true prediction and making a correct prediction. A prediction may be the correct one to make when one has gathered all the evidence currently available and drawn inferences from it in the correct way. But what we really want to know is whether our predictions reliably turn out to be true. If induction did not lead to truth then it would not be justified in the sense at issue. The same goes for warrants, I might add.

Statutes; therefore, (presumably) British(x)} that has true premises but a false conclusion. Although these things' being true is not the *meaning* of being a British subject, they do constitute the criteria for applying the term "British" to Harry. So, I think that here the warrant is just a linguistic convention, and linguistic conventions were one kind of proposition positivism accepted.

The other possibility is the triad of moral, aesthetic and theological claims – given as (iii), (iv), and (v) in the list – for these are largely considered meaningless by even the less extreme logical positivists. Ayer (1946, Ch.6) is unremitting in consigning ethical and theological claims to the flames, though von Mises (*1956*) allows some meaningfulness to such claims.[7] Toulmin's view seems to be that there is no problem with such claims; these are different fields for which warrants can be established, and the way in which they are established, and the kind of backing they need, varies from field to field. The problem is a pseudo-problem resulting from a perceived need to make all arguments analytic.

I still do not think that this works against the analytic ideal as such for reasons already mentioned, but it would still be interesting to ask the question whether it works as an argument against positivism. One problem is that the onus is on the friend of Toulmin to

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[7] Interestingly, Reichenbach (1938, 64-67) does provide a way of making sense of, e.g., theological claims, by using his idea of a coordinative definition. A claim, for example, that cats are divine, is coordinated to some property of cats that inspires awe in its worshippers. The theological term "divine" has empirical criteria of application, and every action that follows upon the belief that a particular cat is divine follows also on the belief that the cat has the coordinated empirical property. This seems to mean that we can reason from cats being divine, but does not mean that we can argue to it, that is to say, establish it as a conclusion. In other words, it does not show that cats are actually divine, which is what interests us here.

show that the inferences we make in support of moral, aesthetic and theological claims are in fact good ones; Toulmin just seems to say that in fact we do make such inferences and leave it at that, calmly brushing any sceptical concerns under the rug as a pseudo-problem brought about by infatuation with the analytic ideal. But there is a genuine problem here, and not obviously connected to the analytic ideal: how do we establish that any such inference is valid? Even valid in Toulmin's non-formal sense? Saying "You just do" is not an answer. If the idea is to leave it to experts in the individual fields to say how they do this, what we get is once again more sociology than normative philosophy. Toulmin raises the problem of the type-jump only to avoid ever really answering it.

In the prediction case we could at least establish whether the inference led us from one truth to another – and by extension whether the warrant led us always or often from truth to truth – by waiting for the predicted event to occur; at some time *t* the indirect proposition (about the future) would become a direct proposition (about the present). This serves as what Toulmin would call a warrant-establishing argument in the field of prediction: a warrant is established when it has been successfully applied in a number of arguments belonging to that field in which the data and conclusion have been independently verified (Toulmin 1958, 112). But here is a disanalogy between the field of prediction and the field of theology (for example), for how can we independently verify a theological claim? We can check our working, of course, and establish that there is no error in performance, that the conclusion is the one that everyone would reach and that the inference has, in that sense, been correctly made, but we do not establish thereby any truth-claim regarding the conclusion, and therefore we do not establish any validity-claim regarding the inference. We can put it this way: there do not seem to be any warrant-establishing arguments in the fields of moral, aesthetic or theological claims; the most we can say about the warrants in these fields is the sociological fact that they are used. These fields present as much a problem for Toulmin and the Toulmin

model as they do for the positivist and the deductive logical model, but at least the positivist makes a serious attempt to engage with the problem, whereas Toulmin dismisses it. Replacing deductive logic with the Toulmin model does not advance towards a solution of the problem one iota.

Perhaps the friend of Toulmin might here say that this objection applies equally to, for example, knowledge of the external world, for unlike the statements in predictions, a statement about the external world is never direct. Prediction, it might be thought, is as different from the field of knowledge of the external world as it is from the field of moral knowledge. How do we independently verify a statement about the external world? We cannot do so directly, it is true, but we can (or so the logical empiricists would argue) say that the existence of the external world is likely given *all* of our inductions.[8] We do not seem able to say on behalf of theological claims that they are even probably true or that they can be even weakly verified.

It is a sociological question more than anything how strong an inference has to be before we are prepared to assert a conclusion unequivocally, or tentatively, for that matter. Perhaps there are different standards in different fields, as Toulmin seems to say, or perhaps there are other factors, such as how necessary it is to make a prediction at all, for necessity may require us to make predictions in situations where, if we were epistemologically

[8] In particular, by concatenating our inductions. See Reichenbach (1938), and especially his discussion of the cubical world in §14 and §15 for a probabilistic justification of belief in the external world. Statements about the external world can be given a weight, and this independently of any single inductive argument for the statement, though dependently of inductive arguments as a whole.

conscientious, we would prefer not to due to lack of evidence.[9] But this is not a matter of logic or of epistemology; the analytic ideal is in no way antipathetic to this kind of pluralism in standards.*

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[9] This can be seen in Reichenbach, where in the end it seems to be because it is not possible not to act – we must act and consequently must take our best wager as the basis of our action – that induction is vindicated. Since the action that follows on our best wager is the same as what would follow if we knew the proposition to be true, we can even co-ordinate truth with our best wager.

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